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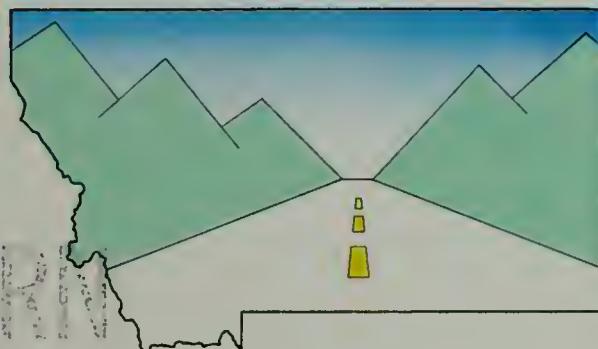
HIGHWAY TRAFFIC COLLISION
COUNTERMEASURES FOR AGING DRIVERS
ON US HIGHWAY 93 CORRIDOR

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Working paper prepared by:

Montana Department of Justice

Highway Traffic Safety Division

Helena, Montana 59620

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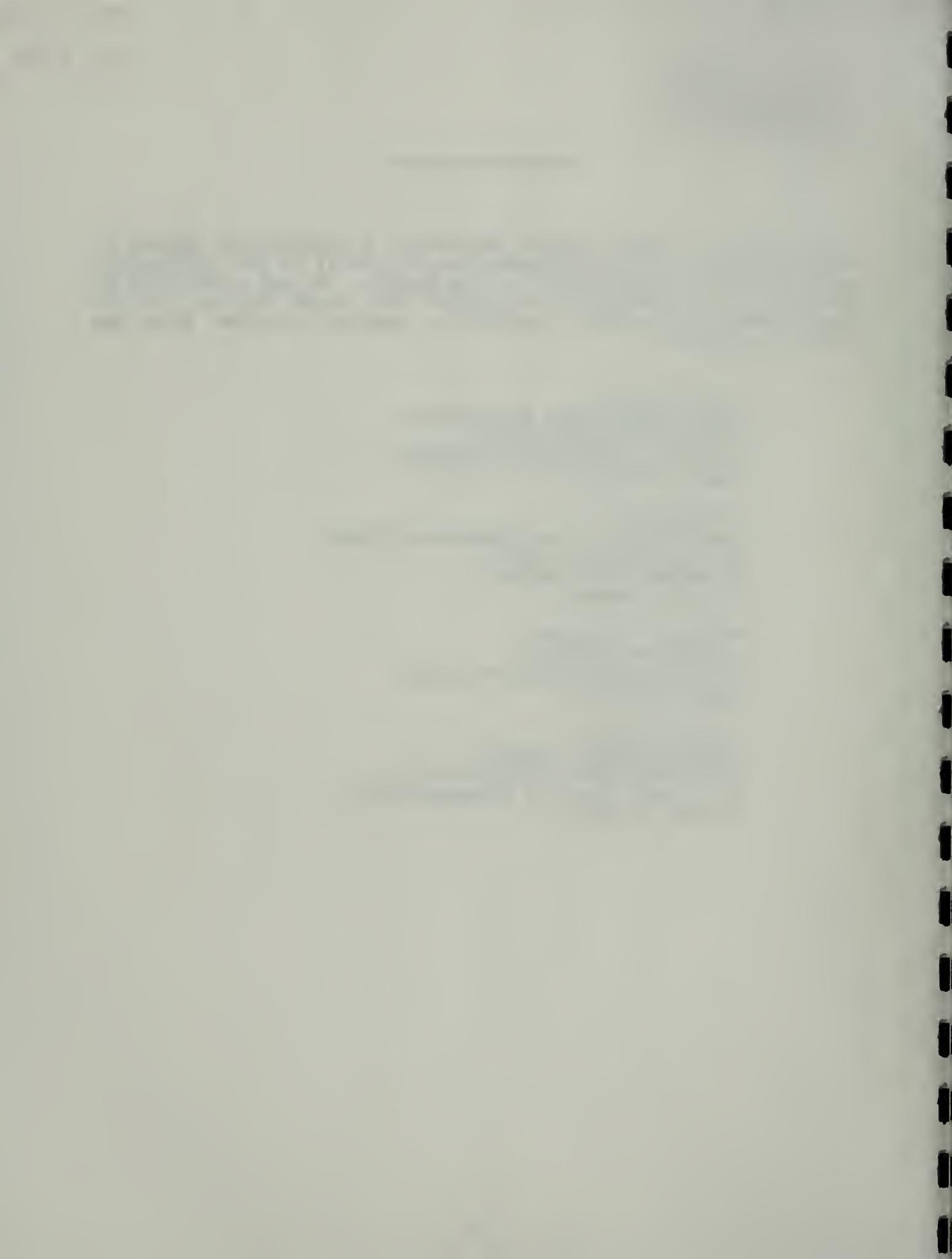


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HIGHWAY ACCIDENT COUNTERMEASURES
FOR AGING DRIVERS
ON U.S. HIGHWAY 93 CORRIDOR

I. Summary

The needs and problems of aging drivers nationally are also reflected in Montana. After youthful drivers, older drivers are the second important age group to be addressed in our highway traffic safety plan. For the purpose of this study, we focused on drivers 60 years old and over to identify aging issues that impact driving in Montana.

Accidents of all drivers were compared to determine the severity of the problem which drivers 60 and older represented. Segments of roadways were analyzed and accident clusters examined. The corridor selected exhibited the highest number of accidents involving elderly drivers. Maps of the major highways in Montana and the study area follow on page six and seven, respectively.

According to national research, older drivers, more than any other age group, are faulted for vehicle crashes. Compared with younger drivers, older drivers were involved in fewer serious accidents, fewer accidents involving alcohol, and fewer accidents involving driving above average speeds. On the selected roadway over a four-year period, older drivers were involved in 186 crashes.

Older drivers are over-represented in certain types of highway accidents. Drivers aged 60 years and up appear in statistics on accidents involving other motor vehicles in traffic and fixed objects. Intersections and night driving were noted as hazardous for older drivers.

Older drivers travel fewer miles than youthful or middle-aged groups but they drive as frequently as young drivers. In total miles traveled, however, older drivers are exposed to greater risk as more of them retain their driver's license longer. Since many older people retire to rural and suburban areas, they rely on the automobile more than any other age group.

We reviewed available literature for specific issues and remedies for those who suffer aging's effects that limit our driving abilities. We looked for low and no cost countermeasures and improvements, particularly ones that could be implemented quickly. Overall we sought benefits for drivers of all ages but specifically some for older Montanans to maintain their mobility and independence.

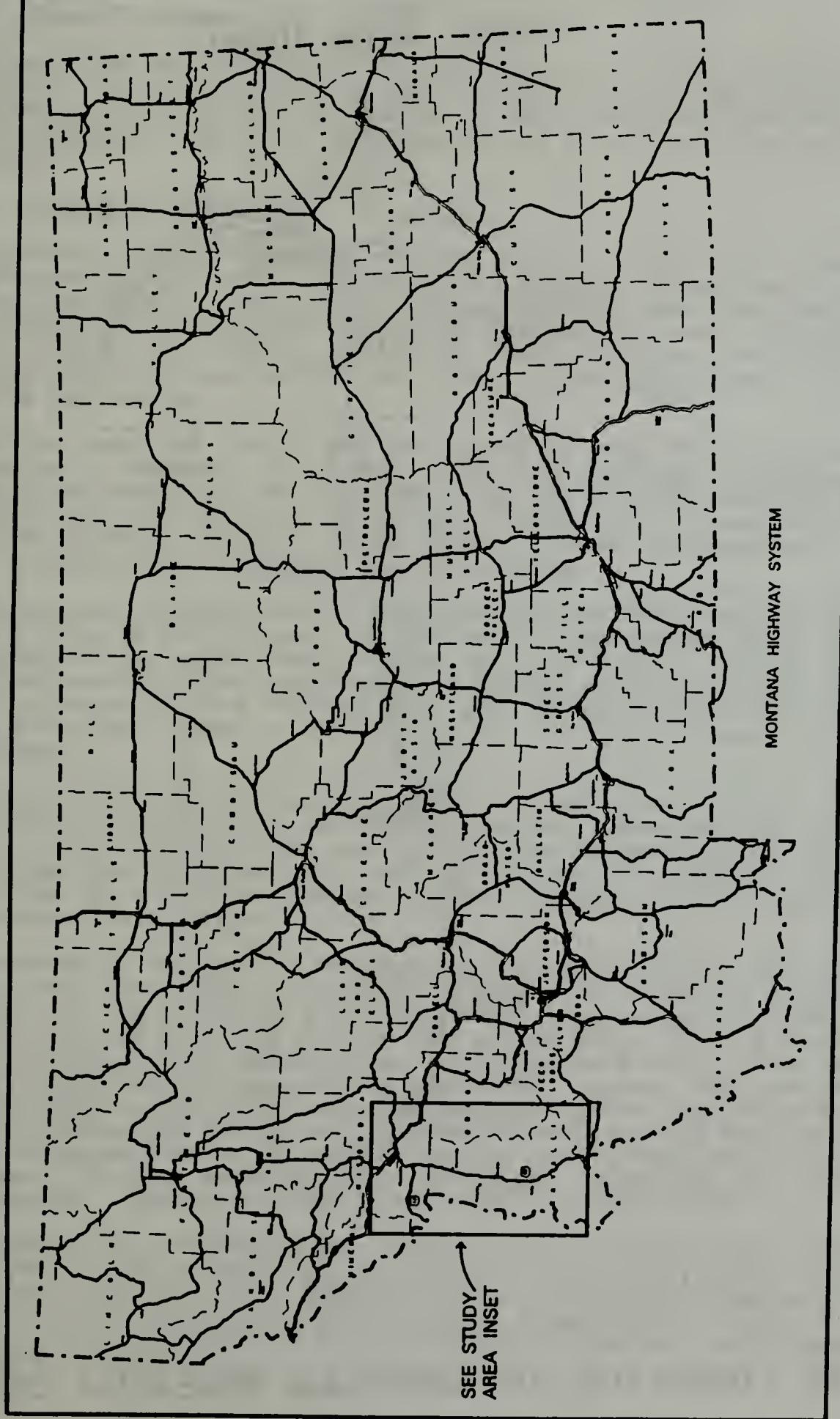
Many of our highways were constructed for a driving population and skills for traffic in the 1930's and 1940's. Now, conflicts arise from the aging of society, increased traffic and speeds, and each person's desire to maintain mobility using the automobile with decreased physical and mental capabilities wrought by aging. The alterations and improvements suggested in this paper are mostly modifications and incremental changes to existing highway traffic conditions, standards or practices within a program context.

We found highway officials recognize that our population's age shift will significantly influence the way we design and operate our highways and streets. Improving the road environment is one effort that enhances driver performance for all as well as maintains or improves the mobility of aging drivers. Other improvements suggested are in areas important to preserving an older persons' mobility and the right to drive.

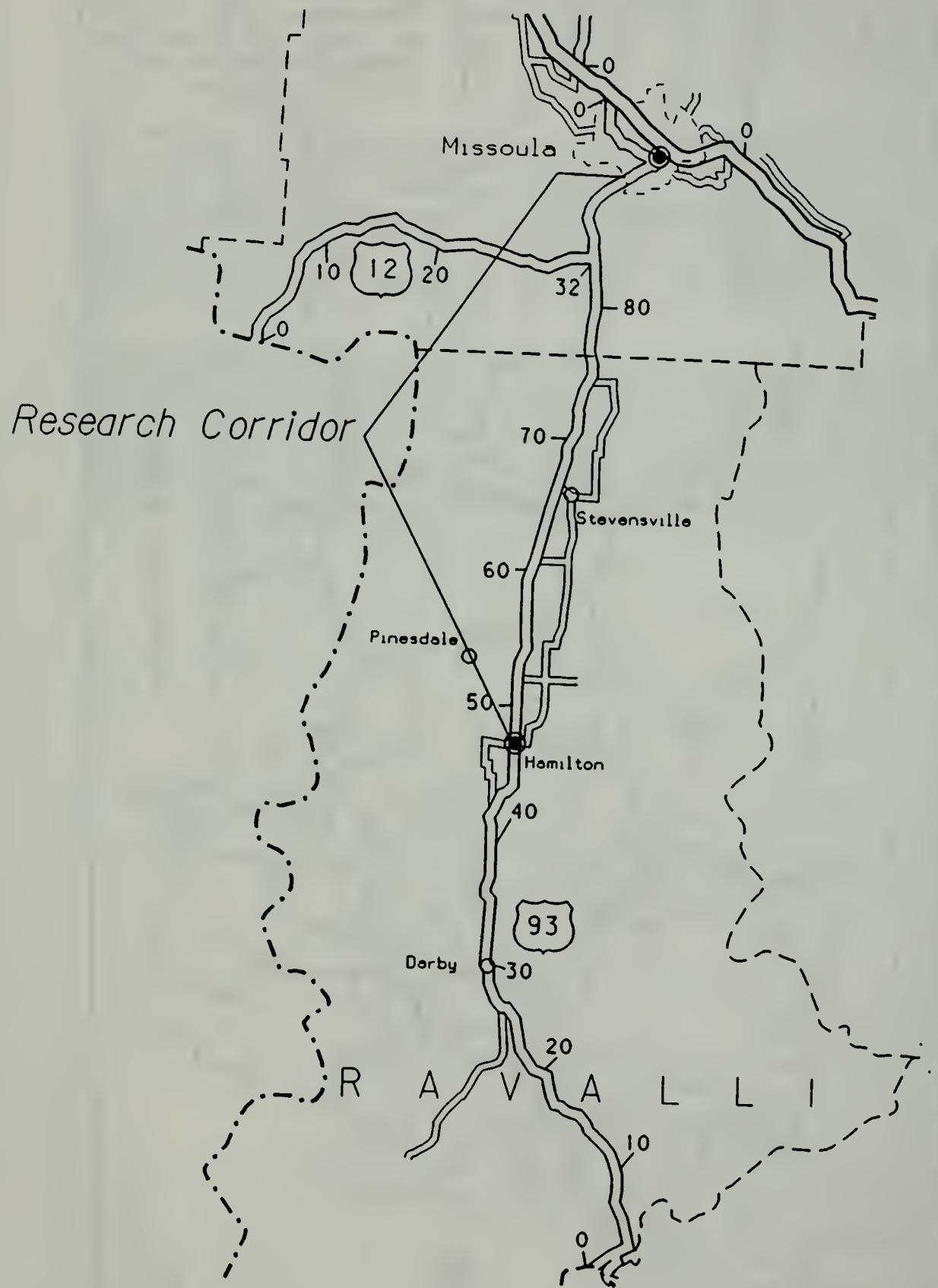
We propose specific improvements to the study corridor. Major roadway improvements include providing a better information system, a more forgiving highway environment, and good "geometrics." Research suggests "geometric" improvements should include 1) easier grades, 2) higher level of illumination, 3) wide shoulders, 4) wide edge and lane lines, 5) better signs and signals, and 6) fewer roadside hazards. The above items 1 and 6 remain unaddressed for now.

Additionally, we include suggestions to strengthen the process for reviewing corridors. Recent public service announcements used in California are to be adapted and used to inform drivers of specific risks. Two self-help items are to be used as handouts, perhaps within the drivers licensing program. Finally, enforcement of key traffic laws is vital in conjunction with proposed public information and education efforts.

Map 1 Montana's Major Highways



Map 2
Study Area Inset



U.S. 93 - HAMILTON TO MISSOULA RESEARCH CORRIDOR

II. Study Findings

Annually the Highway Traffic Safety Division produces and follows a plan. About two years earlier we began focusing on particular segments of our driving population. A youth demonstration project was conducted last year. This year we are working on older driver issues.

A. Demographic Data

Nationally and in Montana we are aging. Our older persons increased both in total numbers and as a larger percentage of our total population. This trend will influence the way highways are designed, built and negotiated. Some design standards adopted in the 1950's and 1960's and still used today do not address adequately the needs of today's drivers, particularly those of an aging population.

The 60 year old and older age group is the fastest growing population segment. In Montana from 1970 to 1990, the 60+ age group increased by 38% compared with 13% for the rest of the population. In the next two decades, respectively, there will be an estimated 23% and a 10% increase. These increases mean an older population of drivers on our roadways.

Nationally, transportation studies for older drivers examined those aged 65 years old or over. At the turn of the century about four percent of our population lived to be 65 years old. In 1984 some twelve percent of our population would reach 65 years of age. High birth rates in 1945 through 1970 and improved health care and medicine are cited as accounting for the rising ages of our citizens.

Today's aging population is a mobile group. They rely on the automobile increasingly as their principal transportation mode. Over 83% of their trips are by private vehicle, about 9% by walking, and slightly more than 2% by public transit. Taxis provide 2% of trips and an "other" category summarizes the remaining 4% of trips.

According to research on travel, older drivers travel fewer miles in a year than other age groups. However, the frequency of their trips is comparable to young drivers. Total miles traveled by older drivers increased because they retain their driver's license longer than former generations: this increases their risks from prolonged exposure to potential accidents. Census data show many older persons residing in suburban and rural areas which makes them rely more on the automobile. Since few suburban and rural areas are adequately served by public transit, future increases in rural transit systems seem unlikely given the prospects for budget increases. Montana portrays these same national trends.

Shopping and personal trips account for over 50% of most older driver's trips nationwide. Generally, older persons travel little for work related trips. Older Montanans take similar trips and are more independent and mobile than their predecessors. Driving is their main transportation choice followed far behind by walking and mass transportation.

Ravalli County and the City of Hamilton are two major communities central to the study corridor. In 1980, Hamilton's population aged 60 years or older was 39% compared with about 15% for the United States and Montana. Ravalli county in 1980 was 18% elderly compared with about 16% for the US and Montana. Comparatively, there is a higher concentration of older persons in this area.

In short, we are growing older. We're no longer the young society of 1900 with only a small percentage of our population age 65 years or older. Today, twelve percent of our nation and a little more in Montana are in this age group. By the year 2020, about 25 percent of us will be over 60 years of age. Researchers estimate that 70 percent of the people over 60, and 30 percent of those over 80, now retain and use their driver licenses. These numbers will grow in the future.

B. Aging and Driving

Driving today's modern roadways requires four crucial abilities:

1. to see and hear the traffic around us;
2. to anticipate, recognize and understand situations;
3. to decide how to react in each situation; and
4. to maneuver the vehicle safely.

Older populations enjoy relatively good health. Yet, certain physical and mental deficiencies develop from aging which affect our driving capabilities. Research shows that older Americans, as a class, tend to suffer decreased capabilities in vision and hearing, cognitive skills, movement, and major side effects of medications.

Chronological age does not reflect personal driving skills or abilities. Aging nevertheless raises questions of how well each of us performs the four distinct driving tasks noted before.

Fortunately, many are aware of their decreased driving skills due to aging and do compensate. Most older drivers curtail night driving, avoid complex intersections, drive slower and avoid high traffic and high speed traffic areas.

National research postulates the potential deficiencies for aging drivers as:

1. **Vision** - Aging commonly produces a loss of visual acuity beginning around age 55. Our ability to see fine detail and to focus declines. Peripheral vision lessens. We require much more illumination to see clearly but our increased sensitivity to glare makes it difficult to adjust to light. Each person's illumination need doubles every 13 years due to the pupil actually shrinking.
2. **Hearing** - Hearing impairment rises dramatically with age. An inability to hear high pitched sounds is a key symptom of hearing loss. If it is difficult to hear sirens, train whistles and vehicle horns, a driver may be a greater risk. Fortunately, this impairment may not be as critical as others in performing driving tasks noted earlier.

3. **Physical** - As we age we are more limited in our mobility and agility. Decreases in the speed of our physical response due to muscular changes can be compensated for, but are compounded by problems of slower decision making. Decreased motor skills for driving performance may be compensated for in some ways. But we should remember as pedestrians, aging causes us to walk much slower than younger people: crossing streets requires more time.

4. **Mental** - Aging slows us down mentally. As we age we need more time to process road related information. We may make decisions readily but we make them less quickly than younger persons. At times aging causes us to become less attentive to driving tasks. Some drivers become forgetful and even suffer forms of dementia.

C. Accidents

Aging means we are more at risk than younger persons in all motor vehicle accidents as driver, occupant or pedestrian. More aged drivers will add to all of the older persons' accident rates. Aging is reflected in an over-representation in certain types of highway accidents.

Nationally, accident rates increase around 60 years of age and rise rapidly from age 69 years and older. The total number of crashes for this older driving group is small. Their involvement rate in accidents is high for those aged 75 and over per groups of 1000 population. Accident involvement rates per-mile-traveled increases around 60 years of age and by age 74 and above approaches the young drivers' high involvement rate.

Drivers over age 65 were found to be over-involved in multivehicle accidents. They are over-involved, too, in fatal crashes that were caused by a failure to yield the right-of-way. Also they are over-represented in accidents involving right turns, backing, parking and head-on collisions.

Aging produces problems for drivers. While the chronological age of any driver does not predict specific problems in driving, aging raises the issue of when each of us must decide to give up driving as one source of our independence and mobility. Older drivers will continue to be over-represented in the previously noted accident statistics, particularly the types and frequency of accidents for miles traveled.

D. Roadway selection

The group reviewed all of the major highways of Montana. We searched thirty-mile-roadway segments for accidents involving older drivers. U.S. Highway 93 stood out as having a large number of older driver accidents. We focused on a segment of this highway from Hamilton to just south of Missoula.

The area's county and federal-aid secondary roadways were checked for traffic accidents involving older drivers. Few older driver accidents occurred on alternate roadways. We believe the lack of significant numbers of older driver accidents in the area related

to relatively low volumes of traffic on the secondary roadways around Hamilton.

According to the thirty-mile-segment analysis, U.S. Highway 93 from Darby to Missoula had the highest number of older-driver traffic accidents in Montana. We selected a corridor from milepost 31 to milepost 90 to analyze the accidents and the related roadway environment. There were 174 traffic accidents involving older drivers during the time period of January 1, 1986, to January 1, 1990. This was about 18% of the total traffic accidents for this period along this highway segment.

Original Montana Highway Patrol accident reports on drivers 60 years old or older were examined to create accident diagrams for the study segment of U.S. Highway 93. Several reports indicated that older drivers had difficulty with conflict points, generally intersections. However, a variety of types and causes of traffic accidents were evident across the whole travel and commuting area.

Interestingly, the City of Hamilton recently requested a city-wide traffic operations study. We have sought the approval of our federal funding sources to assist the community and confirmed their request meets the operations of our currently approved plan. Given the relatively high number of older residents in the City and their growing reputation as a retirement community, we believe their need fits comfortably into our interests in this study and the goal of assisting the aging driver.

In early 1990, Ravalli and Missoula counties completed a traffic accident cluster area study and implemented improvements at about 30 locations on county roads. These included making changes in signs, delineations and markings on roadways in these study areas. We believe these efforts helped the aging driver's problems as well as the general driving public.

III. Countermeasures and Improvements

Aging drivers are not a single homogeneous group nor definable solely by chronological age. Considerable individual differences in knowledge, skills and abilities exist within all age groups, at various ages and among various age cohorts. Programs designed for an aging driver must start, however, with a generalized profile and one probably ordered around two or more cohort groups, perhaps those aged 60 to 69, and 70 and over.

Highway design and operations engineers commonly use a concept called the "85th percentile driver" as the standard when planning roadway construction and improvement. Not everyone agrees with the use of the "85th" percentage value. Some research suggests that highways be designed to accommodate a higher percentage of the motoring public, such as the 95th, or perhaps, the 99th percentile.

A higher percentage in the nineties is warranted as the older drivers are more likely to be included in the upper percentiles. Highway design, construction and maintenance will need to keep pace with society's aging. Research also suggests that it may be desirable to undertake more intensive physical and social improvements in or near retirement communities to assist the older drivers.

Highway engineers are paying more attention to the special characteristics and capabilities of older drivers. Roadway designs and improvements to accommodate aging include:

1. creating traffic signs and signals as large, graphically simple, and clear as possible;
2. recognizing that aging may cause difficulty with certain colors which makes the use of color contrasts important;
3. making extensive use of advance warning and information signing;
4. using more readily visible delineation and markings for pedestrian crossings to help pedestrians and drivers;
5. narrowing the visual search area by careful placement of traffic signals; and
6. simplifying intersections whenever possible.

According to researchers, delineation and sign visibility are two areas that can help the safety record of the elderly. There may be a need for wider edge lines, longer dashes, and a shorter strip-to-gap cycle. Other roadway delineators which could be used include painted and reflectorized guardrails and delineator posts. Increasing sign luminance and letter size promotes increased legibility. Some researchers feel highway signs and markings should be designed to work for all drivers, including those with poor vision and even those under the influence of alcohol or drugs.

We propose addressing the needs of aging drivers using several approaches. These should be integrated into a program for accident prevention and reduction. The following four-part program and various counter-measures and improvements is proposed.

A. Multi-disciplinary Safety Team

Establish a highway design team that periodically reviews and analyzes, coordinates, and implements methods of lowering the number of accidents involving aging drivers within this and other corridors. Members of the team could include personnel from the federal and state highway departments, aging drivers who belong to associations of the elderly, local government officials involved in road construction and maintenance, and others to represent the driving public at-large.

The mission of the team would be (1) to meet annually or more often, (2) to review the status of physical and social conditions affecting driving along accident-ridden corridors, and (3) to seek majority or consensual position on countermeasures and improvements to reduce roadway accidents. Data, information and research must be completed prior to meeting when needs are presented and decisions made about effective countermeasures.

Persons assigned to the team from state or federal agencies should be authorized to commit their agency's resources at least to some level.

B. Public Education

Public information should be directed to the elderly and their associations, as well as to the general driving public. More use of the media could be made to publicize specific highway traffic safety issues. Public agencies already provide significant amounts of information on accident types and causes as well as the roadways involving aging problems. New materials could target the aging driver and be distributed to all drivers at license renewal times.

Additionally, public information and education should be used in conjunction with law enforcement actions suggested in the next section. Warning the public, reminding them of specific enforcement actions and consequences, and keeping them apprised of the need and results of actions is warranted. An informed public will help to reduce injuries, fatalities and economic loss from highway traffic accidents. Too, an informed public is the best social and political force operating that may achieve desirable changes.

Recently produced public service announcements narrated by Chuck Yeager were received along with permission to use them in Montana. They cover issues of vision, safety belts, pedestrians, changing laws, and medication. Appendix A includes maps noting the media that may be used to reaching aging driver populations along the corridor. Contact and cooperation in developing and distribution applicable information and education should be sought with driver education specialists, associations of elderly, local county governments, and public interest groups. A listing of key contacts for the elderly is included in Appendix A.

C. Enforcement

It is said people become creatures of habit: but some driving habits are too risky. Selective police enforcement warnings and citations should be issued at high accident locations and coupled with public education efforts. A speeding citation requires a driver to reconsider his or her personal safety behavior and to reduce the risks he or she takes when driving. Seat belt citations similarly remind drivers and passengers to save themselves and others.

We believe that firm signals must be sent to all drivers. Special enforcement of traffic laws should occur regularly on high accident roadways. Enforcing speed, safety restraint use, and anti-drinking and driving laws provides the best deterrence for most drivers to obey traffic laws. Safety spot checks by the Montana Highway Patrol, for example, incorporate enforcement and education effectively.

Law enforcement officials are conscious of the negative impact of stops, warnings and citations. However, they also realize they perform as a "role model" for many youth and most adult drivers, and consequently must follow the highest standards of driving safety and use of restraints. Laxity in enforcing traffic laws, therefore, sends a poor signal to the driving public and thwarts the effectiveness of existing or new countermeasures to help all drivers.

We recommend that the team meet with all local law enforcement agencies along the corridor to discuss the accidents, causes, results and recommended improvements and countermeasures. Sufficient time should be allowed to fully understand the issues, problems and needs that are amenable to improvement or beneficial change by law enforcement's awareness and actions. Information from this study and other material could be sent to the head of each law enforcement agency in advance of a meeting. This would inform law enforcement of the discussion to be held and alert them to the need for their participation.

D. Licensing

Several things might be done in the area of testing and licensing of drivers. By enhancing the licensing screening procedures, and working with existing driving training programs, more drivers confronting aging would be reached than through sole reliance on general public information and education efforts. Use of self-tests, new visual and manual testing equipment, supplemental driving training and tests, would help drivers identify more difficulties due to aging.

Overall the intent is to reach drivers sooner than later. We must allow them to decide what their limits are, and what to do about it at the same time they consider their needs for independence and mobility. A driver's license is not only a form of identification, it has to some become evidence of their competence and ability for many years. We found no "final" solutions in the research that magically waived an individual's or society's responsibility when deciding who drives when and how.

Included as Appendix B is a copy of a self-test we propose to adopt and use in helping all drivers understand the issues and the impacts of aging. Also, new technologies and procedures used in other states or countries should be examined to find the most fitting changes to use in testing, licensing and processing of all drivers. And where changes are desirable, vigorous efforts should be made to find the resources to finance these improvements.

E. Engineering

Several areas of the roadway environment need to be addressed. These include highway signs, roadway markings, and intersection design. Following are specific illustrations and recommendations.

1. U.S. Highway 93 Corridor - General Recommendations

We recommend that all four-inch-wide pavement markings be increased to six-inch markings, from north of Hamilton to south of Missoula. Principally this involves increasing edgeline markings. However, we recommend the centerline also to be considered.

A total review of the adequacy of all signs along the corridor is recommended as most should be replaced at this time. Two major reasons for this recommendation are: (1) many traffic control signs need adjustment in their placement, and (2) the average age of these signs appears too old for current standards. This corridor would be a good area to reintroduce High-Intensity signing into Montana: at least Super Engineering Grade should be considered.

Aging drivers and the general driving population would benefit also if all traffic control signs placed on the four-lane sections were interstate-size standards. Justification for this action relates not only to the traffic accident experience and existing highway traffic speeds, but also to the existing and projected traffic volumes. Current information revealed volume increases of between 3 and 8 percent per year. The roadside post-mounted delineation appears adequate: however, about 25% are missing, soiled, or old. These should be reviewed and upgraded.

Research has shown that using headlights during daylight hours reduces traffic accidents. Since this study area is experiencing large numbers of traffic collisions, we recommend this corridor be considered for highway signs suggesting that all drivers use their headlights during the day.

Illustrations and recommendations on specific sites along the corridor follow. These examples of the problems and identification of a solution offers more opportunity for understanding and follow-up by persons best able to complete these improvements. They are not exhaustive of the problems noticed but are indicators of the need to conduct a more thorough inventory and improvement schedule.

The following photo prints illustrate examples of highway traffic control signing conditions on US 93.



Most guide signs appear outdated or weathered



Many warning signs should be replaced (weathered)



Missing nuts & bolts



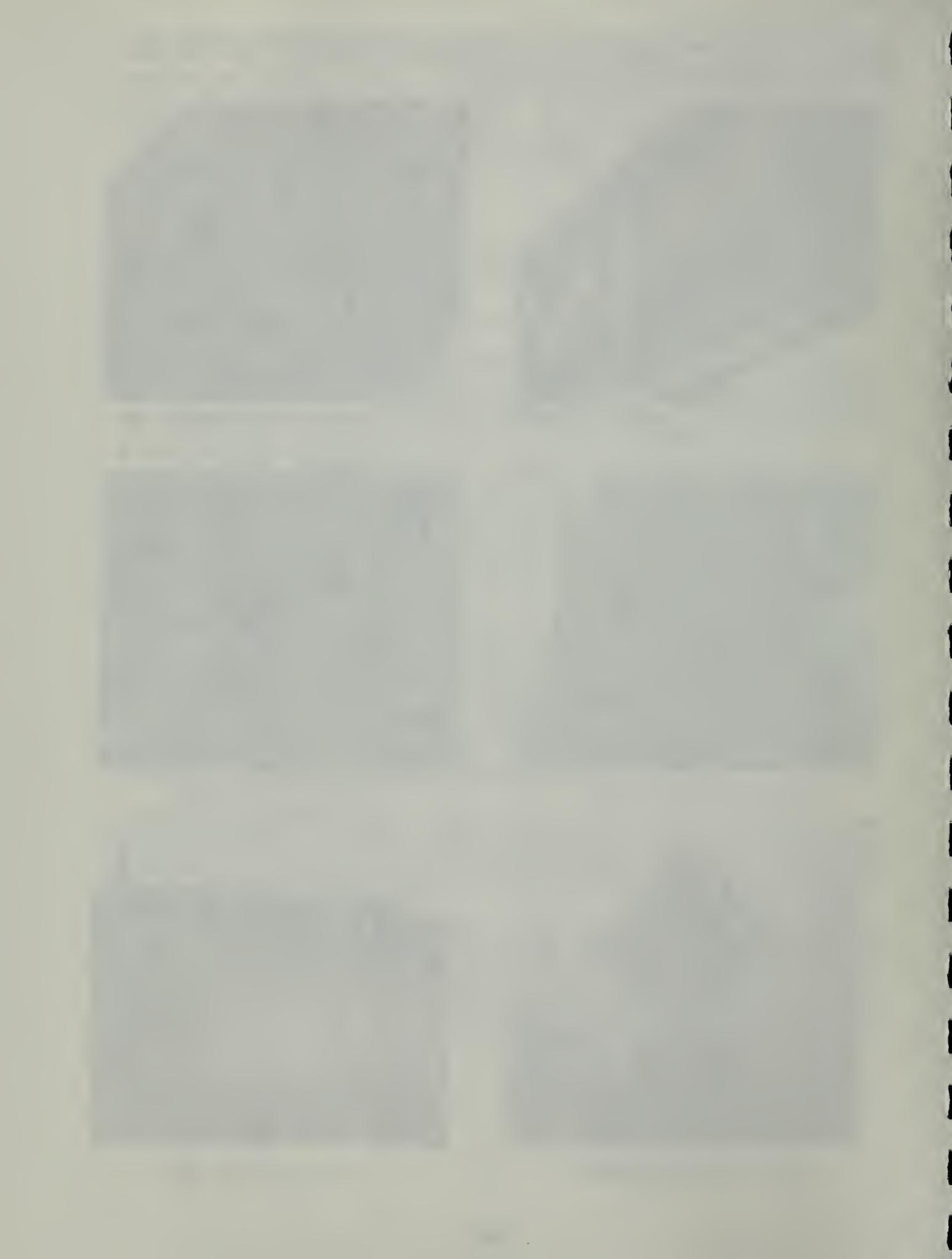
Incorrect location of Chevron signs



Conflicting messages



Missing stop sign



2. Accident Concentration Areas

The US 93 corridor accident information revealed ten locations of particular concern. These locations experienced three or more traffic collisions where one of the drivers was 60 years of age or older. The following is a list of these areas.

- a. Charlo Intersection, MP 38.5
(3 accidents)
- b. Hamilton intersections of Main Street with US 93 (12 accidents), Fairgrounds Road with US 93 (5 accidents), Golf Course Road with US 93 (4 accidents)
- c. Intersection of US 93 with Bowman Road, MP 49.8
(3 accidents)
- d. Woodside Intersection, MP 52
(4 accidents)
- e. Intersection of Pine Drive or Sanitary Landfill, MP 57.9
(3 accidents)
- f. Intersection of North Kootenai Road, MP 67.8
(3 accidents)
- g. Intersection of US 93 with US 12 in Lolo, MP 83.5
(8 accidents)
- h. Intersection of Taylor Way Drive with US 93, Ridgway Drive - Glacier Drive with US 93, MP 83.8
(4 accidents)
- i. Curves and truck weight station, MP 84.5 to 87.5
(12 accidents)
- j. Intersection of US 93 with Blue Mountain Road, MP 88.8
(3 accidents)

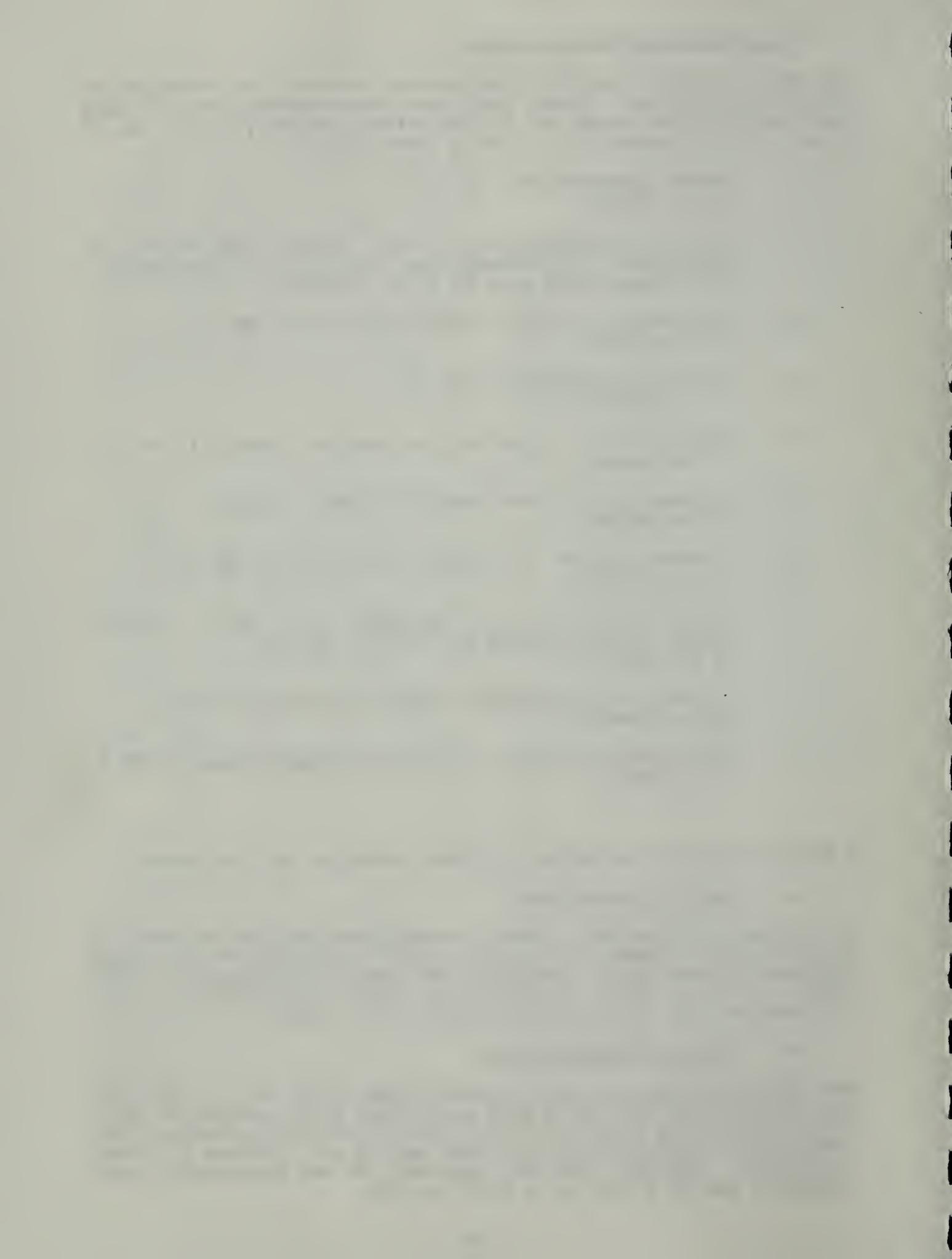
A field review of the above locations revealed the following:

a. Charlo Intersection

As a result of a current highway construction project (RTF-BRF 7-1(36)23 and RTF-BRF 7-1(37)31), this intersection is being completely redesigned. Construction should be completed in the summer of 1991. It is believed that the completed project will help satisfy the needs of the elderly in this area.

b. Hamilton Intersections

The intersections of Golf Course Road with US 93 and the Fairgrounds Road with US 93 were signalized in the summer of 1990. This action was a result of congestion and traffic accidents. The new traffic control devices should assist all drivers at these locations. However, the east approach of the Fairgrounds Road currently has an 8-foot wide left-turn bay.





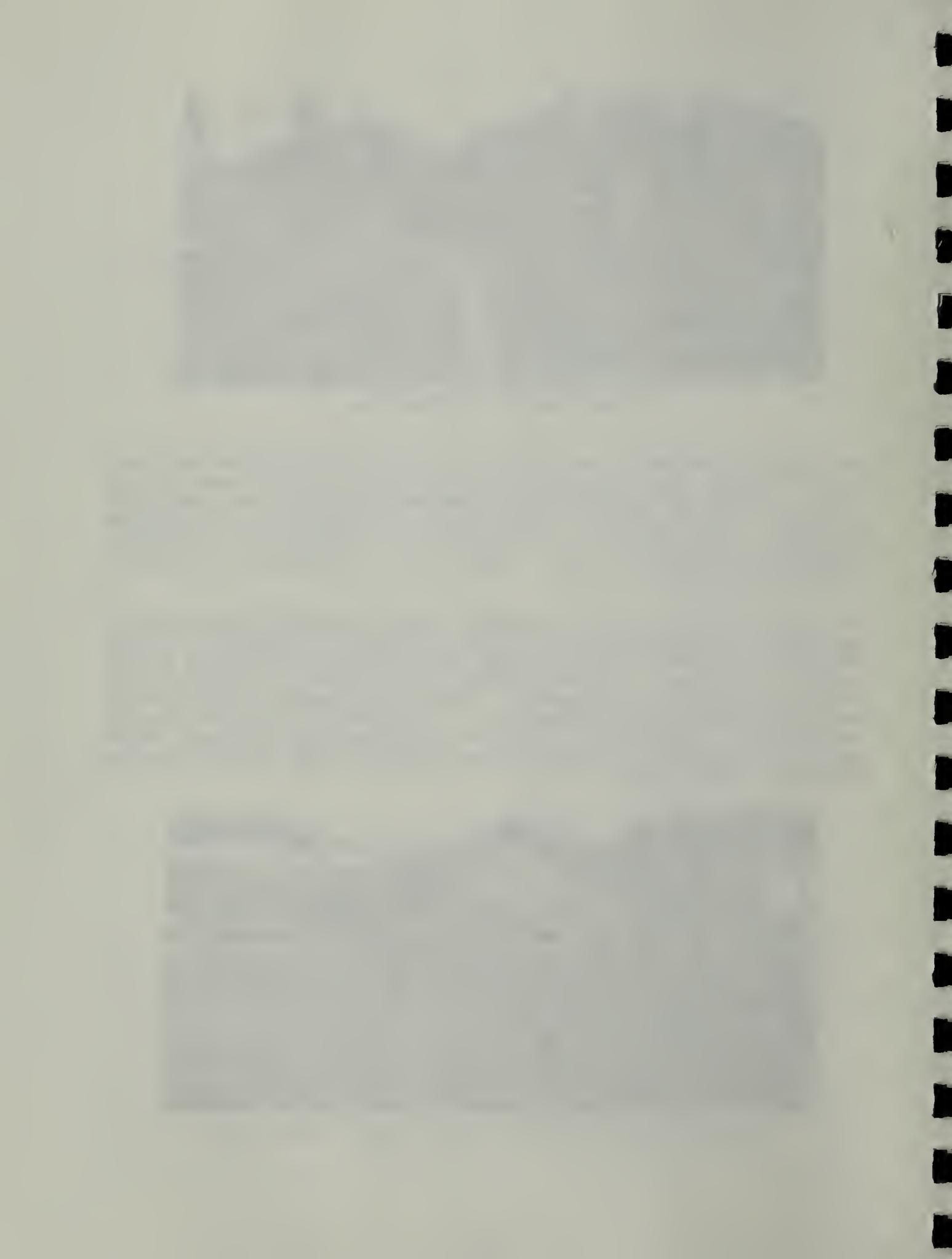
East leg of intersection

The approach speeds on the east leg of this intersection are very low. However, the 8-foot lane should still be increased to at least 10 feet by adjusting the pavement markings or acquiring additional right-of-way. At minimum, this narrow lane should be monitored over the next few months to determine if traffic operational problems exist, and/or if a significant accident history develops.

The intersection of US 93 with Main Street currently experiences the highest concentration of traffic volumes and congestion in this corridor. It also has the highest concentration of elderly driver traffic collisions. These accidents do not show a definite trend to key potential improvements. There are, however, some design problems that should be addressed. The concrete island on the east leg of this intersection acts as a non-forgiving barrier, which results in unnecessary damage to many vehicles when a driver strays from his travel lane.



Looking west on the east leg of this intersection





Looking north on the south leg of this intersection

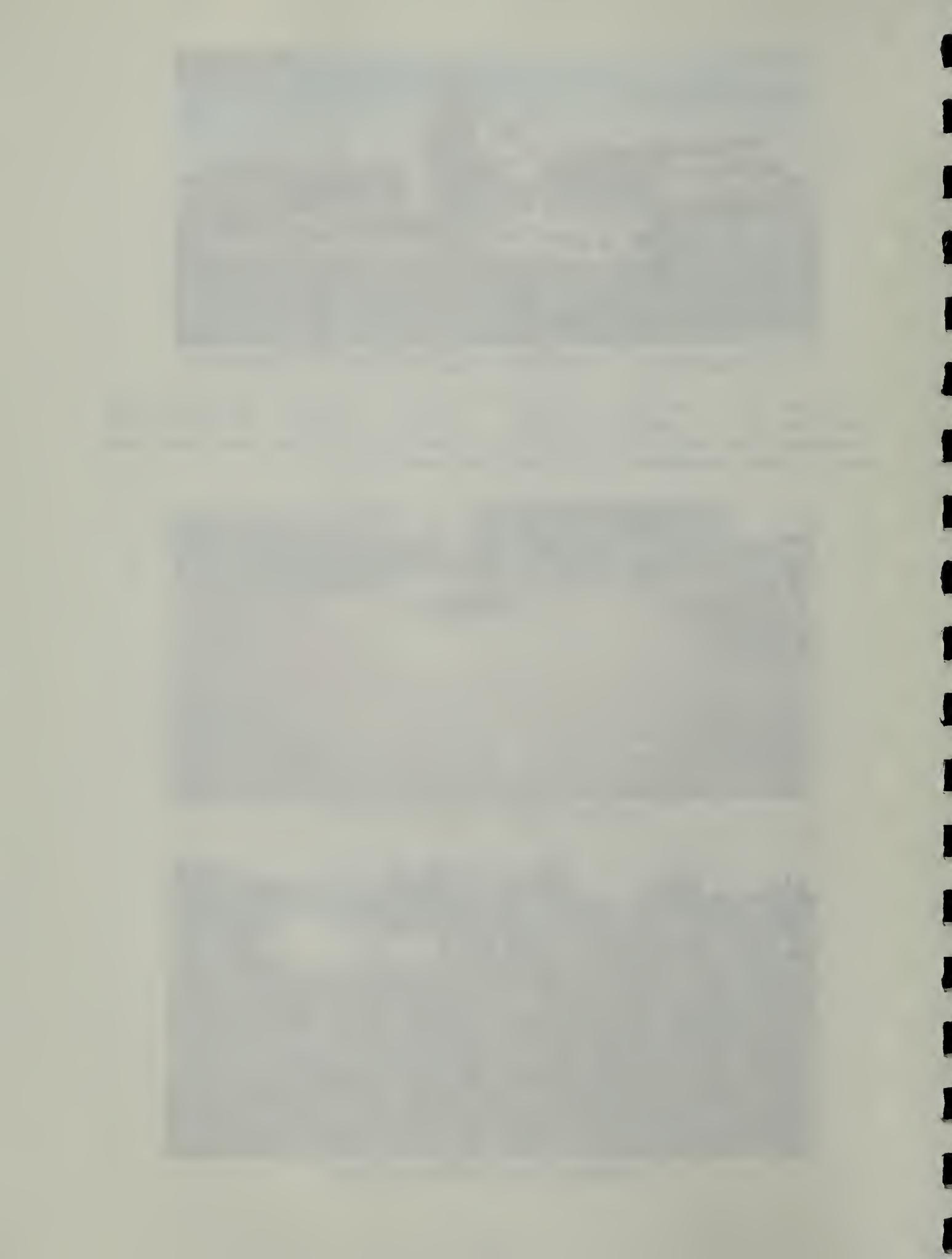
This barrier should be removed and replaced with mountable pin-down curbing or a painted island. Also, traffic leaving this intersection toward the east are faced with a wide-open area and very little guidance regarding lane positioning.



Looking east on Main Street



Looking west on Main Street



Edge lines or curb and gutters should be provided to channelize the drivers to the correct roadway. The unfamiliar, aging or impaired drivers seem to be having difficulty in correctly determining appropriate vehicle positioning in this wide-open area. Eventually, this traffic signal will need to be upgraded from a two-phased system to a four-phased system. Additional turning striping for drivers from the north heading east also should be considered (dotted lines). During our research, we found that a current construction project will provide the majority of the identified potential improvements (RS 269-1(8)0).

Within the next year a study of the intersections of Saranac Street and Desmet Street with US 93 should be completed. These two intersections are starting to experience a few accidents, and with current volume increases they may experience some traffic operational problems within the next five years.

c. Intersection of US 93 with Bownen Road

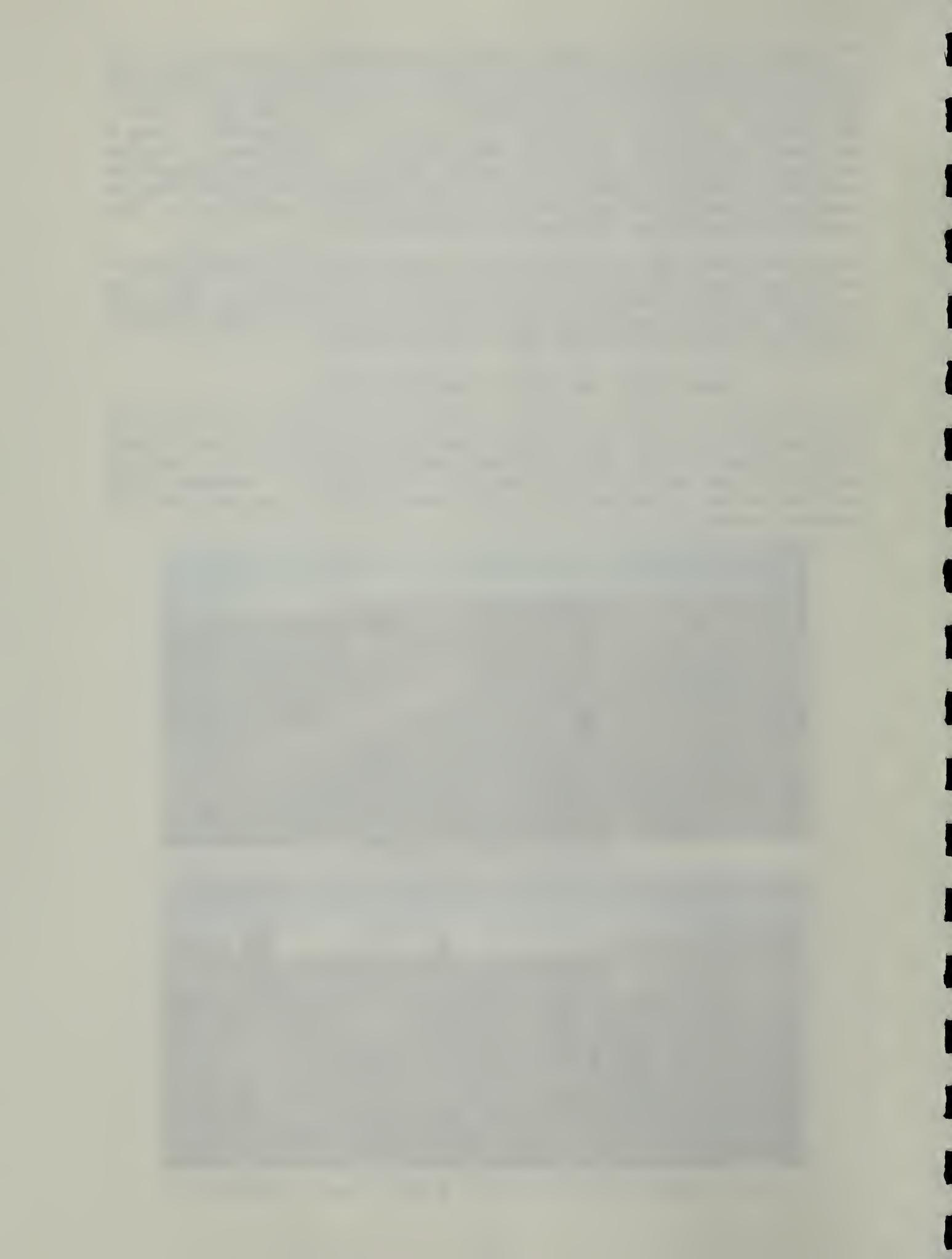
This intersection has three reported traffic collisions involving the elderly and all were turning-movement related. The recent (1990) relocation of this approach and the addition of a two-way left-turn lane on US 93 may help this condition. However, the application of a two-way left turn lane at this type of location appears unusual.



Looking north on US 93



Looking north on US 93 at the Bownen Road intersection



d. Woodside Intersection

This intersection is a conflict point for the elderly driver. The intersection experienced mostly angle-type accidents. During the field review, we noted that the "Guide" signs are placed fairly close to the intersection (260 feet northbound and 450 feet southbound) for existing speeds and have poor reflectivity. Also, the amber flasher for US 93 appears to be undersized, and the westbound stop sign is partially hidden by a hedge.



Northbound on US 93 at Woodside



Northbound on US 93 at Woodside



Westbound at Woodside



Hidden stop sign

We recommend that 1) the "Guide" signs be replaced and relocated further from the intersection (500 to 600 feet), 2) the flasher be upgraded to current standards, and 3) the hedge be trimmed. These improvements should contribute to reducing angle accidents.

Recent improvements regarding curbing and left turn lanes should assist all drivers.

e. Intersection of US 93 with Pine Drive

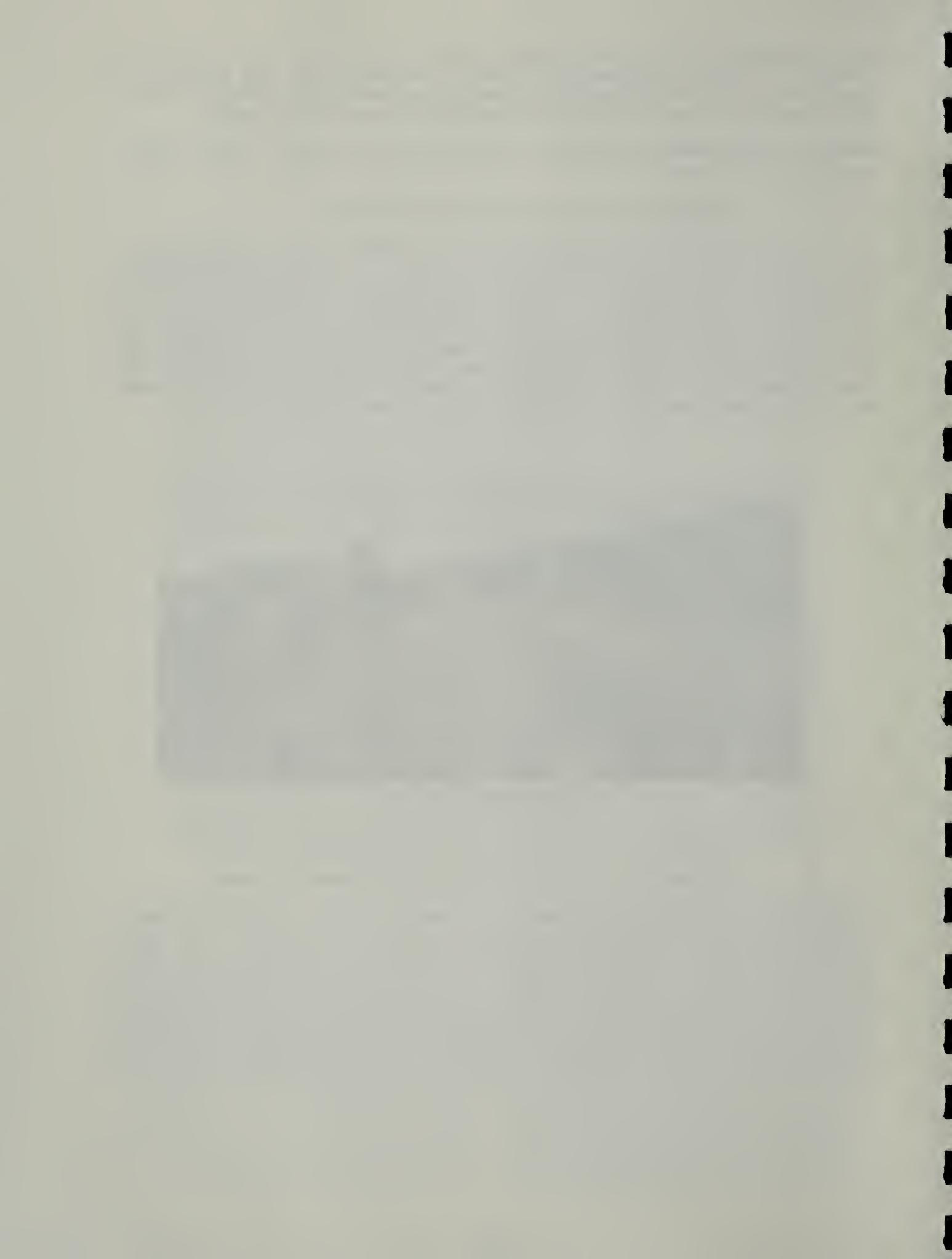
The Ravalli County landfill exists just west of this intersection and a log home building company just east. A traffic count taken in conjunction with this study showed very light side street traffic at this location. However, the "Guide" signs on US 93 are currently located about 350 feet from this intersection and have four-inch letters with incorrect arrow positioning. We believe the signs should be located further from this intersection (500 to 600 feet) because of existing highway speeds, and the "Guide" signs should be replaced with standard letters and legends.



Northbound on US 93

f. Intersection of US 93 with North Kootenai Road

This intersection experienced two elderly driver turning-movement traffic accidents northbound during the study period. The third collision did not appear to be related to this location. We gave consideration to recommending a left-turn bay, or possibly no-passing pavement markings. However, our traffic counts indicated very low side-road approach volumes and mainline turning movements. Therefore, at this time we recommend no changes. Another examination of this location should be completed in about two years. The following photo illustrates existing conditions.





Northbound on US 93

g. Intersection of US 93 with US 12

This intersection has experienced eight elderly driver angle and turning-movement accidents southbound during the four-year study period. As a result of our field review of this location, we believe this intersection is experiencing some operational problems. They seem to be directly related to US 93 southbound maneuvers and US 12 approach vehicles. There seems to be some visual clutter in the northwest quadrant, mostly created by luminaire supports, overhead sign support, and an elevated walkway or parking area.



Looking north from US 12

This intersection also experiences heavy north-to-west and west-to-north turning movements. However, the curb radius for north-to-west maneuvers is relatively flat. This condition forces large trucks to encroach into the eastbound lane of US 12.



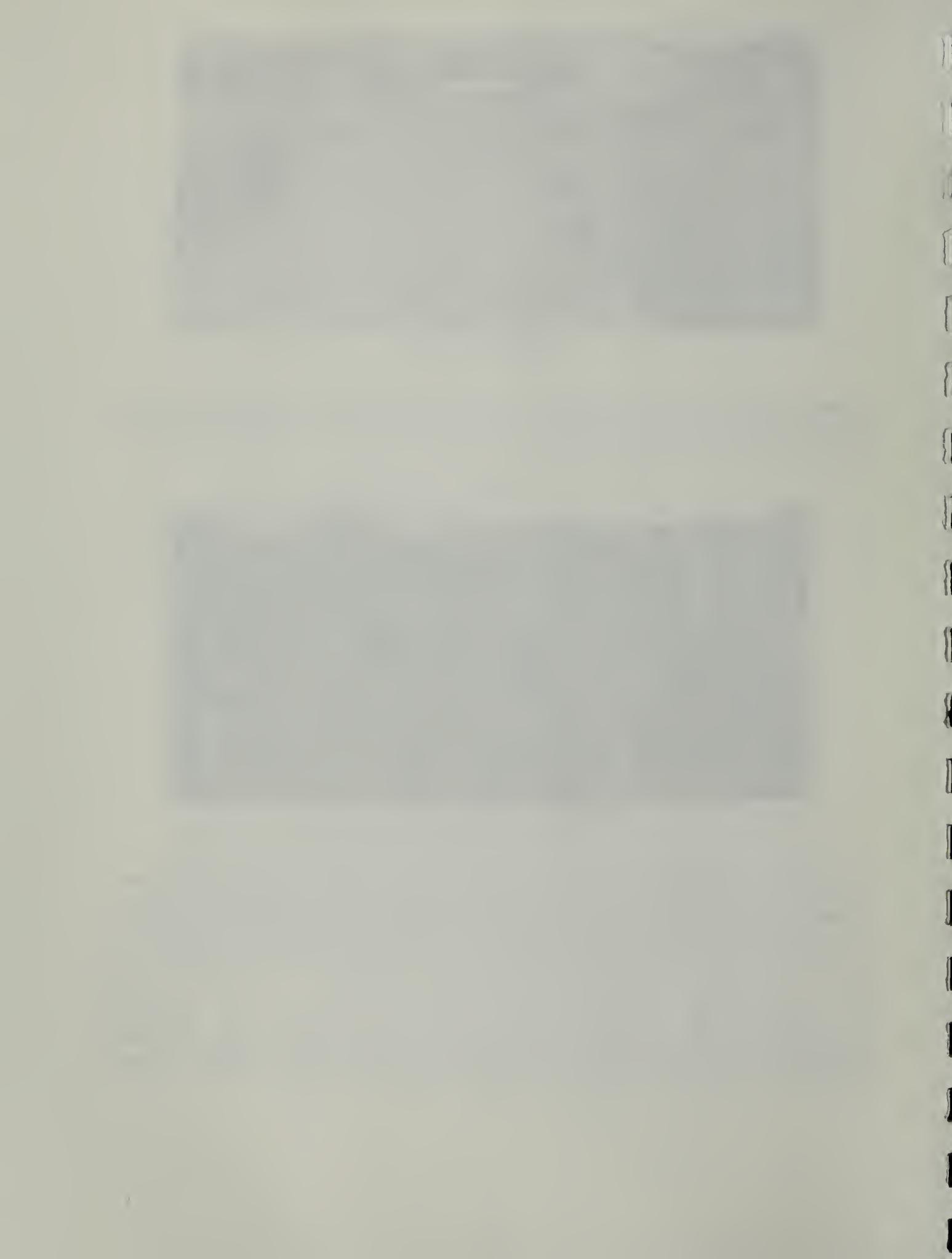
Looking east

Highway signs and supports in the southwest quadrant of the intersection also contribute visual clutter and decrease sight distance at the exit of US 12.



Looking south from US 12

We believe justification exists for relocating the southbound "Guide" sign located on US 93 just north of the intersection to a point approximately 250 feet from the subject intersection. Also a right-turn lane possibly should be provided for southbound to westbound traffic, and the radius of the intersection curbing on the northwest corner may need to be increased. Another item relates to providing a painted stop bar on US 12. As a result of our counts, we believe there is justification for further examination into the possibility of signalizing this location. The last study was completed in 1985, and our spot check shows volume increases on US 12 of over 10 percent per year since 1985.



h. Intersection of US 93 with Tyler Way Drive

School-age pedestrians attending Lolo School was the original justification for the traffic signal that exists at this location. Since the installation of the device, traffic volumes have significantly increased. As a result of this increase, we believe signal heads should be installed on the west leg of this intersection. This action would give justification for possibly closing the south approach to the school. Also, consideration should be given to increasing the existing US 93 signal yellow phase from 3.5 seconds to 4.5 seconds, with a 1-second or 2-second all red.

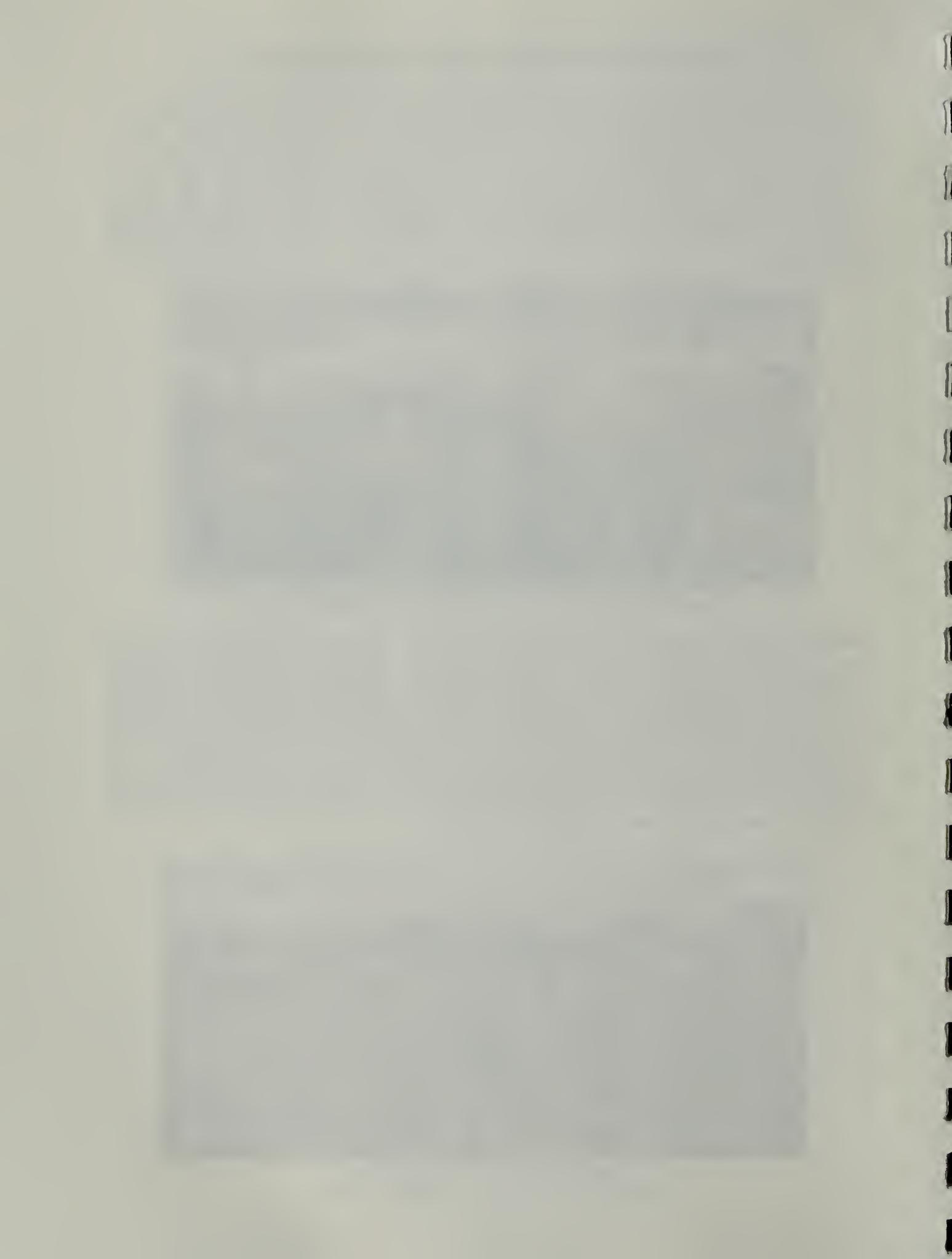


Looking north on US 93 at Tyler Way Drive

Additionally, the two intersections of US 93 with Ridgway Drive and US 93 with Glacier Drive have experienced significant volume increases in recent years. A check of the volumes during a typical afternoon hour showed approach volumes of approximately 90 vehicles for both intersections. Considering recent year increases of three to eight percent in traffic and with current US 93 volumes, it appears that a detailed traffic operations investigation is justified at these two intersections. Consideration should be given to removing the jog between these intersections, thereby lining them up across from each other.



Looking north on US 93 at
Glacier Drive and Ridgway Drive



i. Curve and truck scale area

This three-mile area has traffic accidents spread fairly evenly. However, one area of concern relates to the approach to the flooring shop located directly across from the truck weigh station. Two breaks or openings exist in the concrete median barrier at this point.

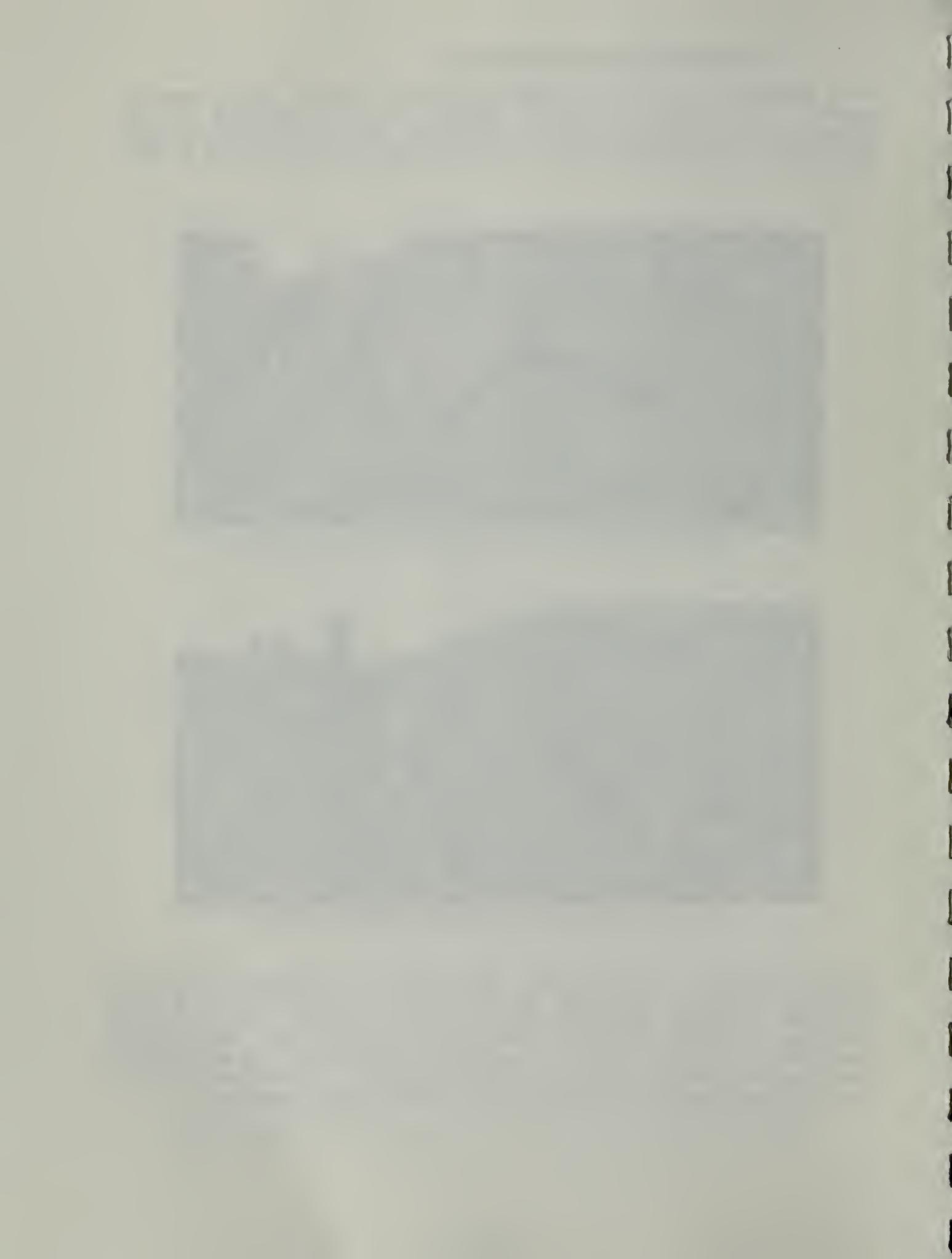


Looking northbound on US 93 (South Opening)



Looking northbound on US 93 (North Opening)

Recent efforts by the Montana Department of Highways relate to closing these two openings in the median and providing a well designed opening approximately halfway between the existing openings. Attenuators are also anticipated at the new opening location. We noted that the majority of the traffic collisions involved southbound vehicles on icy roadways. Winter maintenance activities should be reviewed for possible improvements.



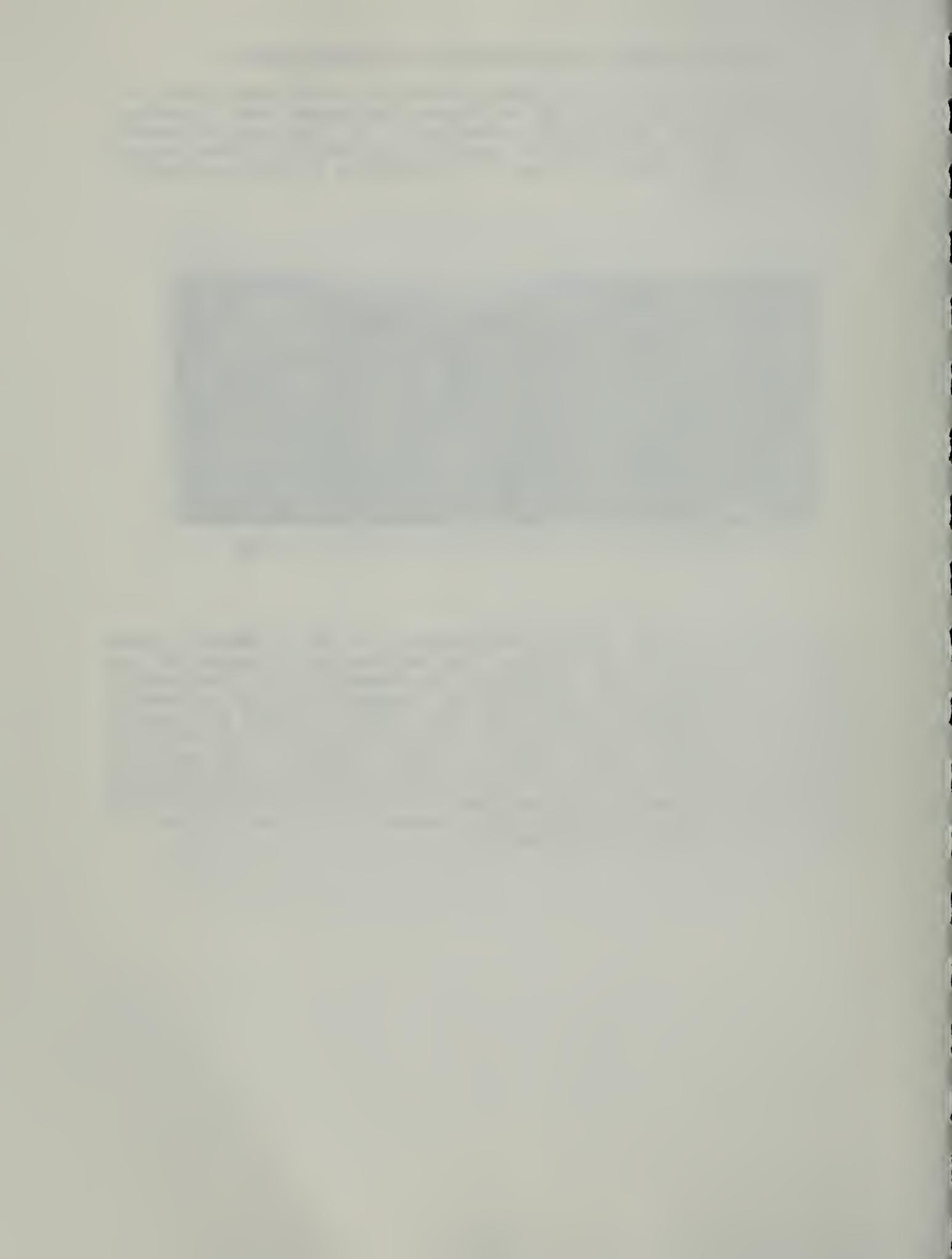
j. Intersection of US 93 with Blue Mountain Road

This intersection has three reported traffic collisions involving the elderly driver, and all of these accidents were turning-movement related. The recent installation of a two-way left-turn lane and a right-turn lane for south to westbound drivers should assist the elderly driver as well as the entire driving population at this location.



Looking north on US 93 at Blue Mountain Road

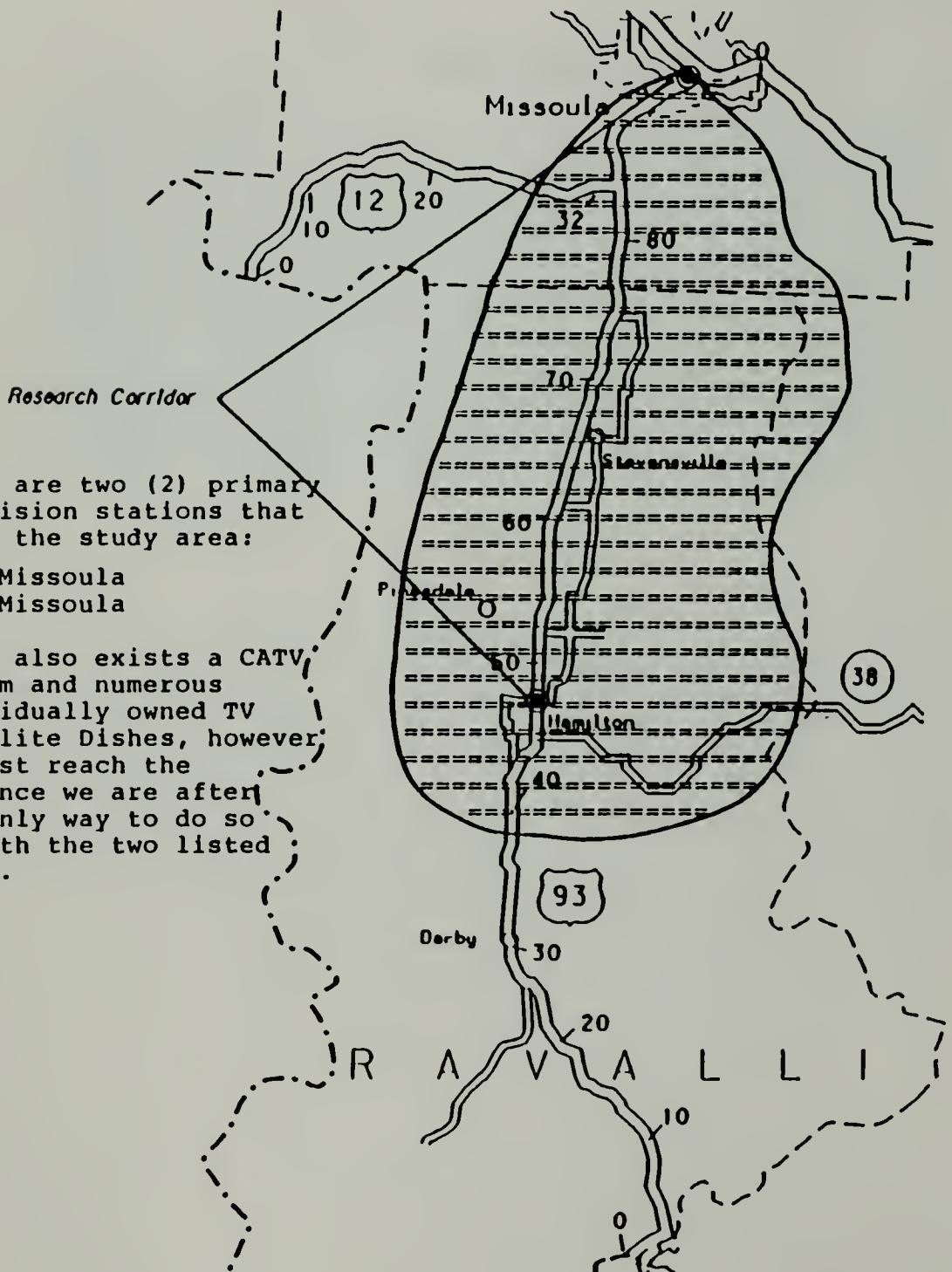
In summary, the US 93 roadway environment is one of several areas that can be improved to enhance the driving performance of the elderly. Most of the suggested improvements are incremental changes or modifications to existing roadway features or design procedures. Providing signs that are easier to read at greater distances, using multiple signing, properly maintaining existing pavement markings and signs, using simpler intersection configurations, or removing, reducing or improving conflicting intersection movements are examples of some of the countermeasures which we believe will particularly benefit the older driver, as well as the entire driving public.



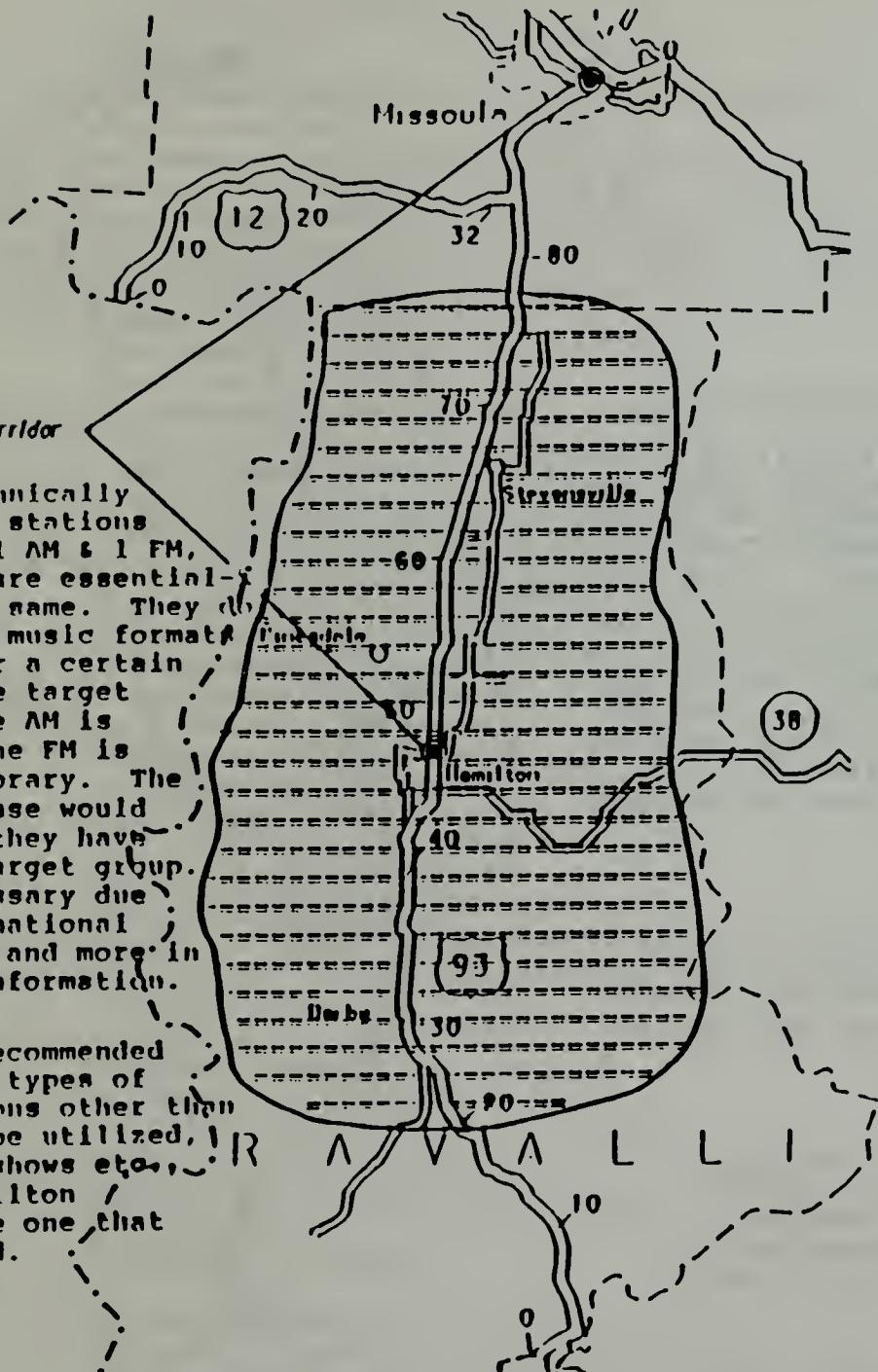
IV. Appendices

- A. Public Information material, Key Contacts**
- B. Self-Test material, Helpful Hints**
- C. References**

TELEVISION PENETRATION IN RAVALLI COUNTY
Study Area Inset



LOCAL RADIO PENETRATION IN RAVALLI COUNTY
Study Area Inset



There are technically two (2) radio stations in Hamilton; 1 AM & 1 FM, however they are essentially one in the name. They have separate music formats and both cover a certain segment of the target audience. The AM is country and the FM is adult contemporary. The prime one to use would be the FM as they have more of the target group. Both are necessary due to local and national news coverage and more in depth local information.

It would be recommended that if other types of radio promotions other than RSA's are to be utilized, such as talk shows etc., the local Hamilton station is the one that should be used.

MISSOULA RADIO PENETRATION IN RAVALLI COUNTY
Study Area Inset

Research Corridor

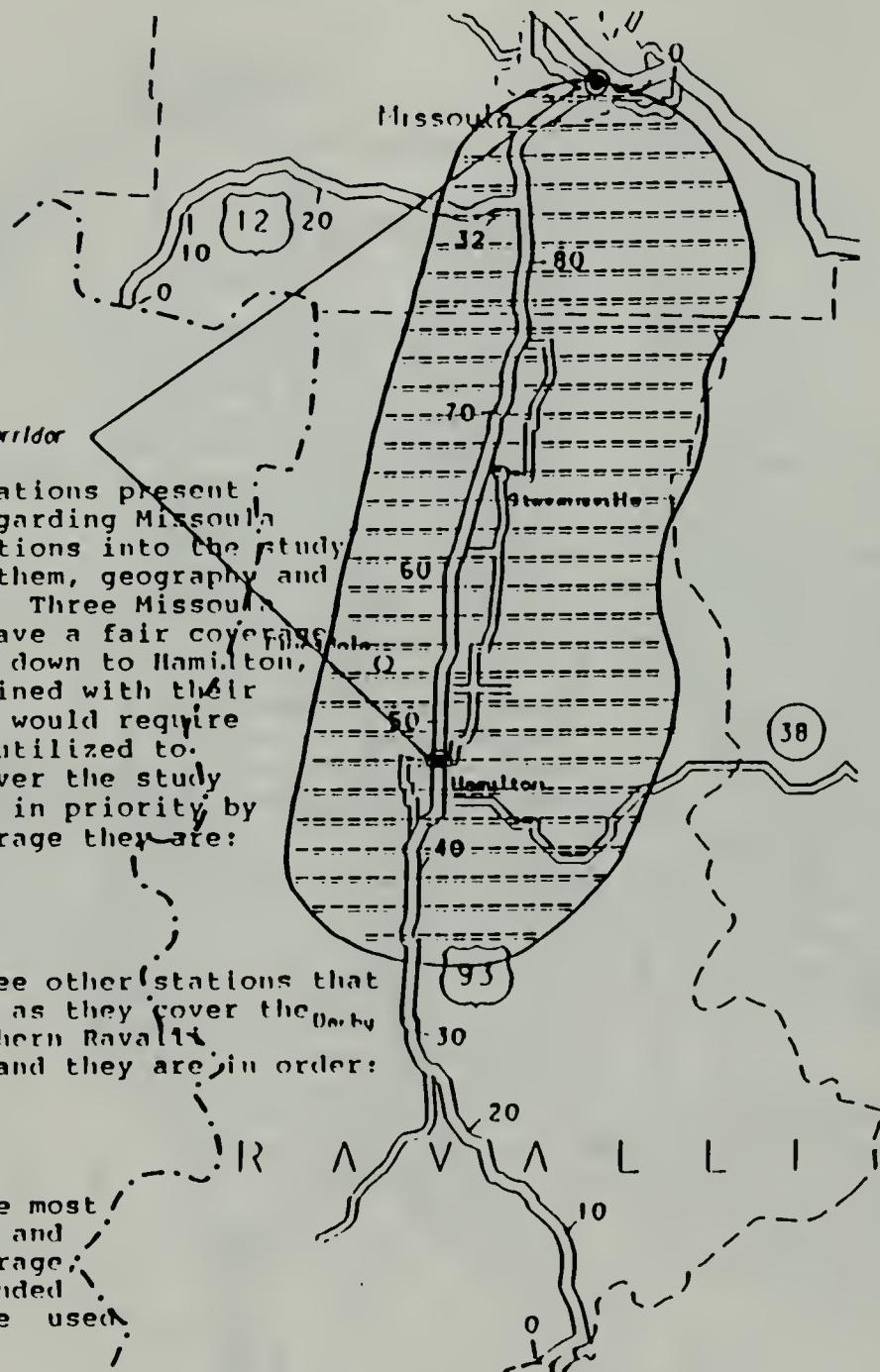
Certain limitations present themselves regarding Missoula radio penetrations into the study area. Among them, geography and music format. Three Missoula stations do have a fair coverage area reaching down to Hamilton, and that combined with their music format, would require that they be utilized to adequately cover the study area. Listed in priority by the most coverage they are:

KYSS-FM
KMSO-FM
KGVO-AM

There are three other stations that could be used as they cover the Northern Missoula-Northern Ravalli County area, and they are in order:

KYLT-AM
KLCY-AM
KGRZ-AM

To provide the most comprehensive and complete coverage, it is recommended all six (6) be used.



CONTACTS FOR SENIOR TRAFFIC SAFETY PROJECT
ALONG P-70

Governor's Office on Aging --Talked with Brian LaMoure, ph. 3111

Susan Kolar Herd --Missoula area (including Lolo) 728-7682

Mentioned Duane Gimble who published the Golden Star News -- this paper is published once every 2 months and is distributed in Missoula and Ravalli counties. His phone is 728-7682.

Duane Lipke --Polson and Bitterroot area ph 883-6211 x288 or 289

Referred to Evelyn Locke (e is silent) who is head of the Ravalli County Council on Aging, ph 363-5691. She gave the following information on the senior centers in Ravalli County:

Stevensville Senior Center
412 Buck St.
Stevensville, MT 59870

Victor Senior Center
2415 Merridian Rd.
Victor, MT 59875

Darby Senior Center
108 Marshall St.
Darby, MT 59829

Florence contact:
Gayle Hill
5078 Hill Drive
Florence, MT 59833

Hamilton contact:
Ravalli County Council on Aging
Box 5024
Hamilton, MT 59840

Corvallis contact:
No senior center but they do have a cafe where they go for meals-- go through Evelyn Locke

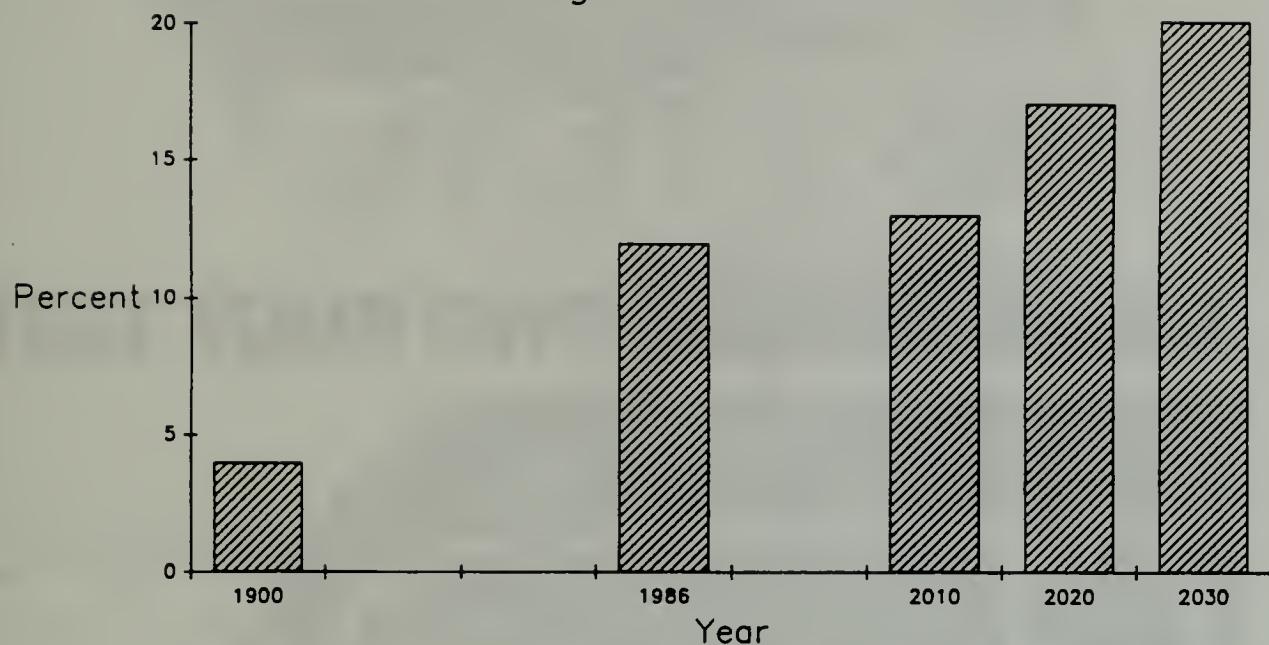
Contacted Reba Fox, Missoula ph. 721-2008 who is the coordinator for AARP 55 Alive courses in the areas surrounding Missoula, which includes our study area. She said they are running more than one course a month in Missoula and that they run about 6 courses a year in Hamilton and perhaps 2 or 3 more in towns like Corvallis and Stevensville.

Drivers age 60 and Over

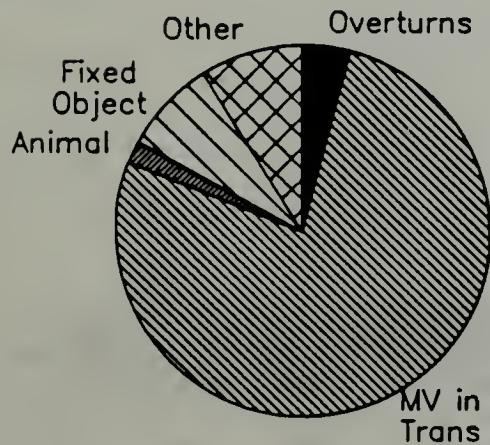
High Accident Corridors
(1986-1989)

Route	Milepoint		Route Description	Accidents	Injury Acc.	Miles
P7	30.000	-	60.000 US 93 S of Missoula	103	42	30
P5	0.000	-	30.000 US 93 N of Missoula	76	34	30
P7	60.000	-	90.000 US 93 S of Missoula	71	27	30
P5	114.961	-	144.961 US 93 N of Kalispell	67	25	30
P5	30.000	-	59.335 US 93 S of Polson	65	29	29.335
P1	124.717	-	154.716 US 2 E of Kalispell	61	33	30
I90	300.000	-	330.000 I 90 Bozeman-Livingston	58	23	30
I90	420.000	-	450.000 I 90 Billings	54	23	30
I15	120.000	-	150.000 I 15 N of Butte	48	14	30
P52	30.000	-	51.149 Flathead E. Shore Rd	47	16	21.149
P52	0.000	-	30.000 Flathead E. Shore Rd	45	15	30
I90	90.000	-	120.000 I 90 Missoula	42	23	30
P1	30.000	-	60.000 US 2 E of Libby	36	14	30
P4	30.000	-	53.561 S of Laurel	35	15	23.561
P50	50.000	-	87.095 S of Bozeman	32	14	27.095
P5	90.000	-	109.612 S of Kalispell	32	15	19.612

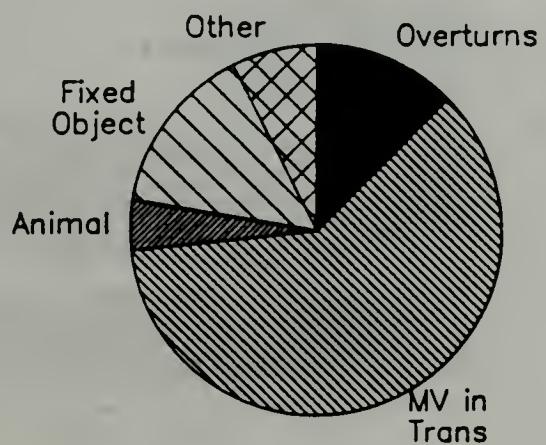
Percent of Total Population Aged 65 & Over



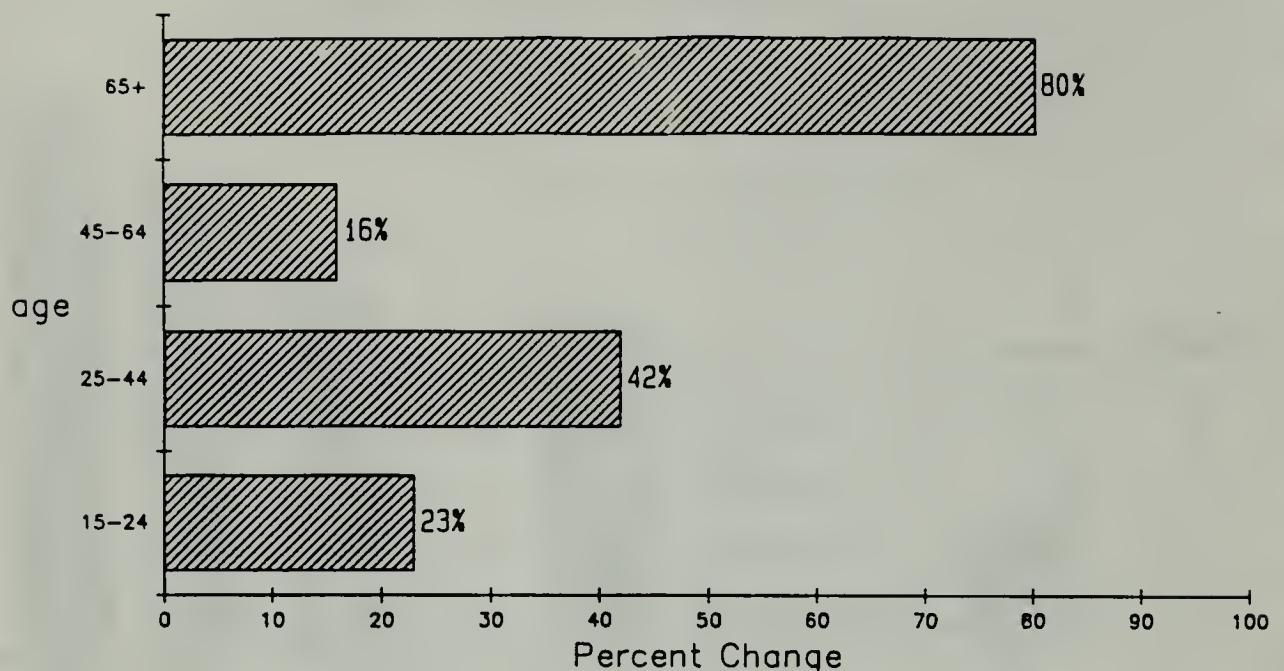
First Harmful Event
(60 & up)



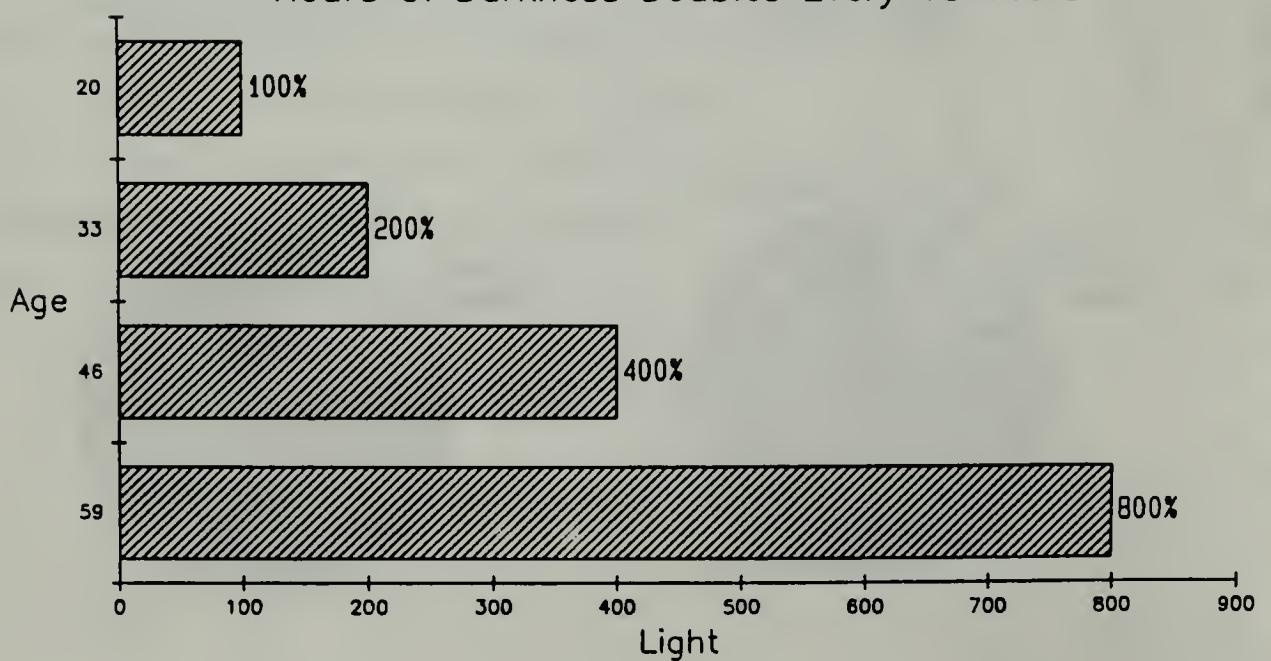
First Harmful Event
(21-59)



Increase in Driver Population
From 1970–1982



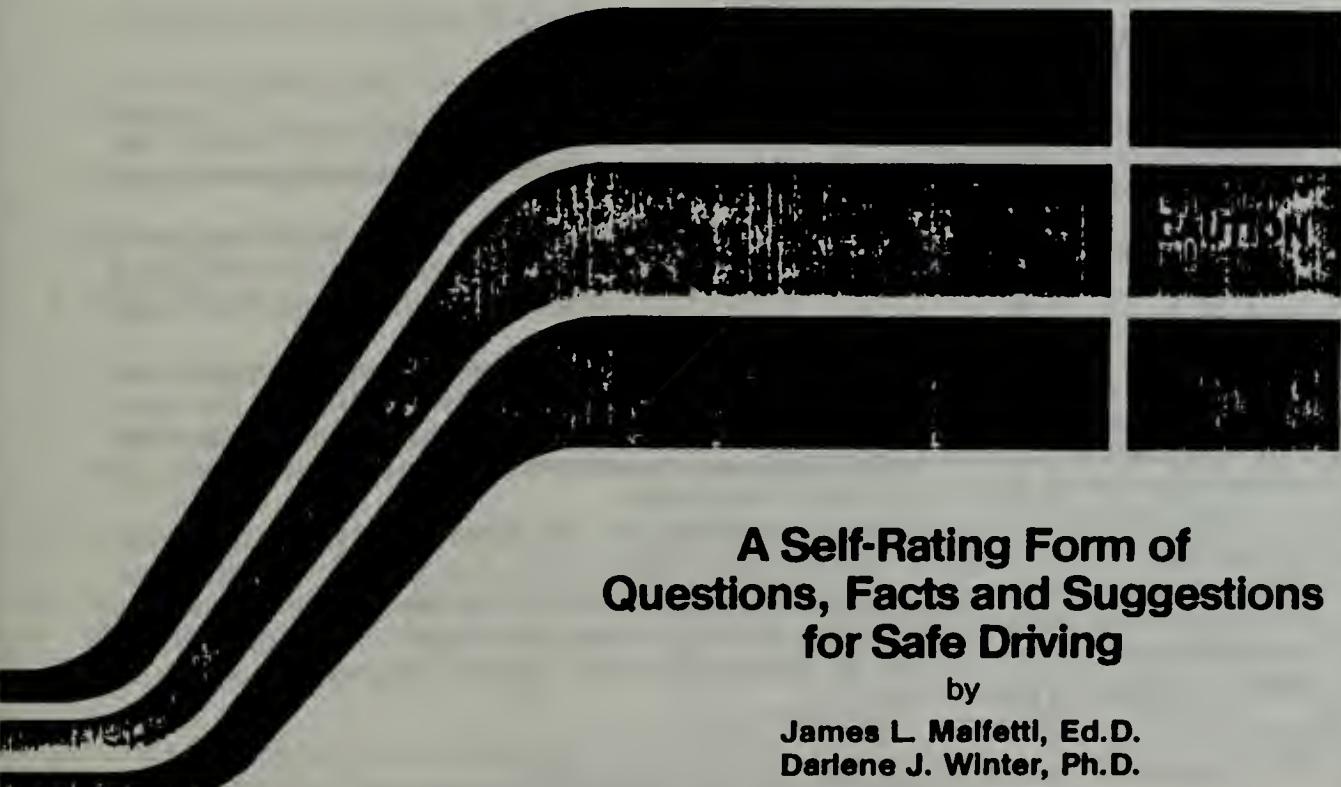
Amount of Light Required to See During
Hours of Darkness Doubles Every 13 Years





DRIVERS 55 PLUS:

TEST YOUR OWN PERFORMANCE



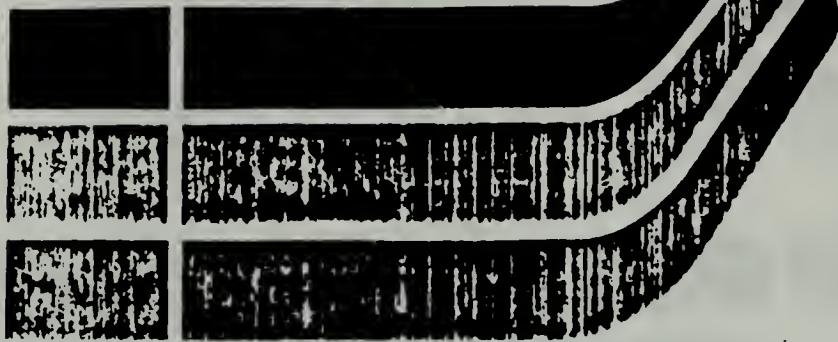
**A Self-Rating Form of
Questions, Facts and Suggestions
for Safe Driving**

by

**James L. Malfetti, Ed.D.
Darlene J. Winter, Ph.D.**

**Safety Research and Education Project
Teachers College, Columbia University
and**

**AAA Foundation for Traffic Safety
2990 Telestar Court
Falls Church, Virginia 22042**



TEST YOUR OWN PERFORMANCE

By the year 2,000, one of every three drivers in America will be over 55 years of age. Freedom to travel by automobile—the way they prefer—will continue to be an important factor in their independence and mental health.

Almost everyone seriously concerned with traffic safety wants to keep older drivers on the highways as long as they can drive safely. Age should never be mistaken as the sole indicator of driving ability. In fact, drivers over 55 represent a wide range of ability, and no individual should have a license jeopardized solely because of age.

However, there is convincing evidence that the skills necessary for safe driving begin to deteriorate at age 55 or thereabouts, perhaps dramatically so after 75. There is also much evidence that aging drivers can cope safely with this decline. Toward that end it is important that they recognize their limitations and unsafe practices, and be aware of remedial actions—and that is the purpose of the older driver self-rating package.

The rating form on the next page is for your use alone. After answering the 15 questions, you will compute your own score and be advised of what it means. In a detailed explanation that follows the interpretation of your score, you will be informed about what measures you should take to cope with any of the deficiencies revealed; or you will be helped to understand when remedial measures may no longer be possible. *The central idea is to help you drive as long as possible with safety to yourself and others.*

Now, please turn to the next page and follow *Instructions*. ►

DRIVERS 55 PLUS:

INSTRUCTIONS: For each of the following 15 questions, check the circle **(V)** of the one answer that most applies to you.

	Always or Almost Always	Sometimes	Never or Almost Never
--	-------------------------------	-----------	-----------------------------

- | | | | |
|---|-----------------------|-----------------------|-----------------------|
| 1. I signal and check to the rear when I change lanes | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 2. I wear a seat belt..... | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 3. I try to stay informed on changes in driving and highway regulations | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 4. Intersections bother me because there is so much to watch for from all directions | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 5. I find it difficult to decide when to join traffic on a busy interstate highway. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 6. I think I am slower than I used to be in reacting to dangerous driving situations..... | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 7. When I am really upset I show it in my driving..... | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 8. My thoughts wander when I am driving | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 9. Traffic situations make me angry..... | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 10. I get regular eye checks to keep my vision at its sharpest | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 11. I check with my doctor about the effects of my medications on driving ability (<i>If you do not take any medication, check this box <input type="checkbox"/> and skip this question.</i>).... | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 12. I try to stay abreast of current information on health practices and habits. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 13. My children, other family members or friends are concerned about my driving ability..... | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

Note new headings → None One or Two Three or More

- | | | | |
|--|-----------------------|-----------------------|-----------------------|
| 14. How many traffic tickets, warnings or "discussions" with officers have you had in the past two years?..... | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 15. How many accidents have you had during the past two years? | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

SELF SCORING: Count the number of check marks in the red circles and record the total in the **red** box below. Follow the same procedure for the **green** and **yellow** circles.

These are your Check Mark Totals.
For score and interpretation, see next page. ➤

SELF-RATING FORM

SCORING: There are 4 steps.

Step 1: Write your red and yellow Check Mark Totals from the previous page in the same color boxes to the right

X 5 = _____

Step 2: Multiply the number in the red box by 5.

X 3 = _____

Step 3: Multiply the number in the yellow box by 3.

Step 4: Add the results of Steps 2 and 3.

YOUR SCORE IS _____

Interpretation of Score: The higher the score, the more the danger to yourself and others.

SCORE

MEANING

35 and over



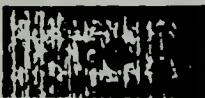
STOP! You are engaging in too many unsafe driving practices, and are a potential or actual hazard to yourself and others. Examine the questions you checked red or yellow. Ask yourself how or if these conditions can be corrected, and what action you will take.

16 to 34



CAUTION! You are engaging in some practices which need improvement to ensure safety. See the red and/or yellow circles you checked for areas requiring change.

15 and below



GO! You are aware of what is important to safe driving, and are practicing what you know. Nevertheless see what red or yellow circles you checked. They are areas in which even you might improve your driving practices.

These scores are based on what you and other drivers 55 and over have told us about driving practices and habits as well as on research studies of older driver problems and needs. Your score is based on your answers to a necessarily limited group of important questions. For a complete evaluation of your driving ability, many more questions would be required, along with medical, physical and licensing examinations. Nevertheless your answers and score give some indication of how well you are doing, and of what should be done to improve things.

In general, a checked red circle for an item reflects an unsafe practice or situation that should be changed immediately. A checked yellow circle means a practice or situation that is unsafe, or on its way to becoming so, if nothing is done to improve it. Green is a sign that you are doing what you should be doing to be (and remain) a safe driver.

Most of the red and yellow answers represent practices or situations that can be improved by most drivers. The following pages discuss the various questions on the self-rating form you have completed. After a general introduction, the discussion is divided into five areas which traffic safety authorities have judged critical to safe performance—*driving habits, physical condition, emotions, health habits, driving records and other indicators*. As the discussion moves through these categories, you may wish to focus on what applies to the red and yellow circles you checked.

The discussion is organized around why an item is important (**FACTS**), and what, if anything, can be done to overcome shortcomings (**SUGGESTIONS**), so that you can maintain safe driving performance, or improve it.



DRIVERS 55 PLUS: DISCUSSION OF ANSWERS

INTRODUCTION

Driving involves starting a motor vehicle, joining traffic, operating it safely with minimum disturbance to other drivers, leaving traffic, stopping and getting out. A driver must perform a series of coordinated tasks with hands, feet, eyes, ears, and body movements, while making decisions about what he or she sees, hears and feels in relation to other cars and drivers, traffic signs and signals, conditions of the highway and the performance of the car. These decisions, usually made in close proximity to other vehicles, must be converted into braking, steering, accelerating or some combination to maintain or adjust one's position in traffic. And these decisions must be made frequently and quickly. About 20 major decisions are necessary for each mile driven, and drivers frequently have less than one-half second to take action or suffer an accident.

The record of older drivers is good when one counts accidents per driver, but bad when one counts the number of accidents per mile driven. Older drivers have fewer accidents because they drive less, and at less dangerous times. But when they have an accident, it can be very serious. In a two-car fatal crash, where one driver is 65 or older, the older driver is 3.5 times more likely to be killed.

What is responsible for the higher accident rate and fatality rate per accident of older drivers? Probably aging and the normal decline of the skills needed for safe driving. We do not see or hear as well, or react as quickly as when we were younger. And, for some of us, age-related illnesses such as glaucoma or arthritis are additional debilitating factors. Moreover when we are injured, we do not heal as quickly as when we were younger. What is moderate to serious injury for a younger person may be fatal for us.

However, there are actions we can take to stay

safely on the road, and these will be discussed as you review your answers to the 15 self-rating questions. Discussion is organized about why a question is important (FACTS) and what can be done to improve your driving performance (SUGGESTIONS).

As we age, some of us try to deny we are beginning to lose the skills needed for safe driving, pretending that we see better or act more quickly than we do, yet a decline may be obvious to others. Or we can identify and respect our age-related shortcomings, and cope with them by taking constructive actions. We are urging the latter, and providing SUGGESTIONS toward that end—simply because for all of us, there will come a day when we can no longer drive safely. We hope FACTS and SUGGESTIONS will assist in planning for that day and recognizing it when it arrives.

The discussion which follows is presented in five categories of three items each: Driving habits (Items 1-3); Physical Conditions (4-6); Emotions (7-9); Health Habits (10-12); Driving Records and Other Indicators (13-15).

DRIVING HABITS (Questions 1-3)

Driving habits are everyday driving practices—from starting the car and joining traffic to leaving traffic and parking. Those habits either place us at higher risk or reduce the chance of accident.

1. I signal and check to the rear when I change lanes.

Even those of you who checked a red circle answer probably know that "always" is not only the best but also the only acceptable answer. However, what we know and what we do can be two different things. Good driving includes checking the rear view mirrors, looking to the rear to cover the "blind spots," and signaling before changing lanes.

FACT: Records indicate that one of the specific unsafe driving habits of older drivers is failing to look to the rear. In observational studies, older drivers report being unaware of having failed to look to the rear before changing lanes or backing up. The fact that some do not recognize that they engage in this dangerous habit might be due to gradual changes in driving behavior to compensate for chronic stiffness and/or pain in the neck and upper body due to arthritis. Older drivers may not be aware of how careless they have become because of the pain and difficulty of turning around to see to the rear. Furthermore they may lack knowledge of the importance of "always" checking to the rear because they have driven accident-free for a long time without following this practice—and have been lucky.

SUGGESTIONS:

- Understand that failing to check the rear can cause a serious accident.
- Honestly examine your own lane changing and backing behavior and resolve to improve if "always" is not your answer.
- If you have arthritis or joint stiffness, inquire through your physician and other sources about medications and exercises that might improve your flexibility.
- If stiffness, arthritic pain or other physical problems keep you from turning and looking to the rear as easily as you would like to, install a large, wide-angle rear-view mirror inside your car and a right-side mirror outside to aid in seeing to the rear. Make sure you learn to use the mirrors correctly because those of convex design can make objects appear much smaller and farther away than they actually are.
- Take a retraining or refresher course which highlights the problems of older drivers and suggests what can be done to reduce them. Check with the motor vehicle department to learn where such courses are given. The American Association of Retired Persons (AARP) and the American Automobile Association (AAA) have been active in this regard.

2. I wear a seatbelt.

The only acceptable answer is "always," and that is true even if you are going to drive only a

short distance under ideal weather conditions. Typical accidents for older drivers occur on clear days, on straight, dry pavement, and at intersections within 15 miles of the driver's home. But to be effective, seat belts should be properly worn (see diagram).

*Proper use of currently available safety belts is essential to avoid some belt injuries. Serious or fatal injuries can occur from improper use of safety belts: i.e., the shoulder belt under the arm and/or the lap belt over the soft part of the abdomen.

Wear your seat belt
correctly... across your
shoulder and chest.
NOT under an arm,
across your hip bones,
NOT your stomach.
It's comfortable... It's easy.



New York Coalition for Safety Belt Use
Medical Society, State of New York

FACT: One-half of all traffic fatalities of record could have been lesser injuries if the people had been wearing seatbelts. When involved in accidents, those 65 and older are more likely than younger persons to be injured or killed. Our bodies are not so resilient as those of the young and we don't heal as well. In a crash, there are two collisions: (1) the vehicle against another vehicle or object, and (2) the persons inside against the interior of the vehicle. The fastened seat belt protects you against the second collision. If your car is traveling 30 miles an hour, so is everything in the car including you and the passengers. If you hit another car or object, that impact will stop your car in 1/10th of a second. This is the first collision or jolt. It is immediately followed by the second collision, when the unfastened driver, passengers and all unattached contents fly forward through windshields, against dashboards or onto concrete outside. An unbuckled occupant in a 30 mph crash will hit the dashboard or windshield with several thousand pounds of force. Passengers who are thrown from the car are 25 more times likely to die. All of this at 30 mph. What happens at higher speeds is unspeakable.

The negative tales you may have heard about seatbelts, such as being trapped in a car which catches fire, are either myths or extraordinarily

rare events. Properly fastened seatbelts are unquestionably the number-one proved available way to reduce injuries and fatalities following a crash.

SUGGESTIONS:

- Accept the clearly demonstrated value of seatbelts in saving lives and reducing injuries. Convince those you love and who travel with you of this value. Then make sure that you and all who ride in your car wear them, properly fastened, at all times.
- If your seatbelt is extremely uncomfortable or cannot be properly fastened (see diagram), take it to a competent mechanic for appropriate alterations.
- If your car does not have an automatic reminder to fasten seatbelts, leave yourself a conspicuous note or some other device to remind you and your passengers. Many people, with all good intentions, simply forget.

3. I try to stay informed on changes in driving and highway regulations.

The best answer is "always," but "sometimes" is obviously better than "never."

FACT: Drivers over 55 have a deficient knowledge of new developments in traffic regulation. Testing indicates that they are less familiar than younger drivers with the meaning of newer traffic control laws and devices. This deficiency encompasses such areas as right-turn-on-red laws, directional signals regulating lane use, and shared left-turn lane markings.

Knowledge of signs and symbols is vital for older drivers, especially because their ability to see and interpret these devices diminishes with age, and little is being done by highway engineers to improve the situation. The elderly themselves recognize the need to be current in these regards, to avoid the new situations they may meet on the road without knowing how to respond to them. Drivers of any age can be a menace if they do not know and follow "the rules of the road." But older drivers, not knowing the rules, can also be fearful and hesitant in traffic. That fear can be overcome through knowledge. Another reason for remaining current is being prepared for the changes one may suddenly encounter in the license examiner's office, where

failure may result in revocation of the license.

SUGGESTIONS:

- Convince yourself that a knowledge of current traffic laws, devices, signs and symbols is essential for the safety of yourself and those with whom you share the road. Depending on experience alone to keep informed or to help you "slide by" could be a costly, injurious miscalculation.
- Obtain and study the current driver licensing manual for your state.
- Contact your state motor vehicle department, and ask what else you can do to keep up to date.
- Enroll in a driver or refresher course for older persons, such as one mentioned earlier.

PHYSICAL CONDITIONS

(Questions 4-6)

Driving requires *sensing, deciding* and *acting*. *Sensing* means being alert through all senses to what is happening in traffic. Most such clues reach us through our eyes; some through our sense of hearing, a few through touch and smell. After we pick up cues for action through *sensing*, we then have to decide what to do about them. *Deciding* refers to all of the thought processes which occur between our impression of events and our response to those events. We must assess actions we might take, and choose those least likely to cause an accident or interfere with traffic.

After *deciding* what to do, we have to translate our decision into *acting*: braking or accelerating, steering, signaling, etc. . Unfortunately for us older drivers, aging reduces our ability to meet these requirements, singly and in combination. Though we age at different rates, in different ways, in general we hear and see less well; we process information more slowly and act less quickly. Adding to the driving difficulties of some of us, are such conditions as cataract and arthritis.

4. Intersections bother me: there is too much to watch for from all directions.

Ideally you might like to answer "never," but if you checked the yellow circle "sometimes" or the red circle "always," you are not alone. Intersections are complicated centers of fast-moving

traffic, and it is difficult to "take them in" all at once.

FACT: Intersections are one of the more common sites of accidents involving older drivers (particularly when they are turning left). Intersections can be the "acid test" of how well you are doing as a driver. Certainly the more complicated intersections are among the most grueling experiences a driver faces: they enable you to judge whether your *sensing, deciding* and *acting* abilities are adequate for today's fast-paced traffic, or whether they are in need of improvement. If improvement seems unlikely, avoid the more complicated intersections whenever possible.

SUGGESTIONS:

- Take a good look at your driving skills and at what bothers you most at intersections. Is it an inability to handle all the information quickly enough? Is it unsureness about how to position the car for a left or right turn? Is it difficulty turning the steering wheel because of arthritis or some other physical problem? Sometimes this sort of analysis can lead you to solutions.
- Perhaps you simply do not understand what you are supposed to do at intersections and when you are supposed to do it. Studying an intersection while you are on foot may help you to negotiate it later in a car.
- Enroll in an older driver retraining course. What you learn may give you the confidence to recognize that you can do or are doing everything correctly at intersections, and that they are not as dangerous as they once appeared.
- Plan your trips to avoid busy intersections and/or use them at less congested times. Plan an alternate route to avoid left turns from busy intersections.

5. I find it difficult to decide when to join traffic on a busy interstate highway.

Most of us would like to answer "never," but if you checked "sometimes" or "always," you would not be alone in expressing feelings of insecurity and nervousness about entering a busy interstate highway. Older drivers admit to a lack of confidence and feeling nervous on such roads. Because they dislike the speed of traffic and the number of cars on interstates, some say they

never use them. That is unfortunate, for they are the safest of all roads.

FACT: On the basis of miles driven, freeways show considerably lower fatality rates than conventional two-lane, two-way highways. The decision to use or not use a busy interstate is based on personal feelings of ability to drive on it safely. Interstate highways were built long after most of the elderly learned to drive. If they were living where interstates were convenient and often traveled, they probably gained experience to feel confident about driving on them. However, other older drivers, especially women who did little if any driving until late in life, and people living in rural and suburban areas, probably had little experience with interstates and consequently are fearful of what they "don't know" about them. In addition there are more cars, faster traffic and more congestion. Unless older drivers have stayed informed of these changes, and have made them part of their everyday driving experience, freeways can be intimidating.

Of course aging and the normal decline in sensing, deciding and acting abilities can make an aware individual fearful about interstates. The reasons most often expressed are that "people drive too fast on them." To some older drivers, these may be valid reasons for avoiding interstates. But greater knowledge of proper operating procedures on them might encourage greater use. It would be unrealistic to avoid our safest highways in the name of safety.

SUGGESTIONS:

- Judge where you are in relation to the knowledge and skills needed to drive on interstates. Be honest with yourself.
- If you decide you do not know enough about them, and that reluctance to enter them may in part be "a fear of the unknown," take a driver refresher course to learn how to use interstates properly.
- If you decide you have the ability to drive on interstates safely, ask an experienced, safe driver to ride with you and suggest what you should and should not do. Then *practice* when traffic is less congested.
- If, regardless of what you learn to do, you still are nervous and have doubts about driving on

interstates, try to avoid them. You are your own best judge of whether they are safe for you, regardless of how safe they may be for others.

6. I think I am slower than I used to be in reacting to dangerous driving situations.

"Never" is the only satisfactory answer here. Emergencies and dangerous situations may be relatively uncommon, but fast and safe reaction to them is essential. While good *sensing, deciding* and *acting* are all necessary for safe driving, these skills come together in acting—what you do or fail to do quickly enough to avoid an accident. It is in acting that older drivers most markedly demonstrate a slowing down.

FACT: Older drivers have trouble integrating information from several sources at once, and therefore respond less quickly to hazardous situations. We are all subject to the physical and psychological changes of aging, but some of these changes can be hazardous to our driving. The increased accident rate per mile of travel beginning between ages 55 and 65 parallels certain age-related declines in driving skills. Our response as drivers represents a series of events beginning with what is seen or heard, then giving meaning to this information, judging what action is necessary, and sending instruction to the appropriate muscles to respond. This response—the "bottom line" in avoiding an accident—is dependent on the total bodily system.

Changes in the muscles and bones account in part for the increase in the rates of accident and severe injury of drivers over 55. Reaction time is necessarily increased by arthritic joints and tight musculature, and joint flexibility and muscle strength diminish with age. But there are steps that most drivers can take to improve their response to dangerous situations.

SUGGESTIONS:

- Enroll in an older-driver refresher course where you can learn to increase your ability to organize information more rapidly and to anticipate and avoid dangerous situations.
- Avoid, when you can, driving in congested, complex, fast-moving traffic.
- Keep yourself physically fit and mentally stimulated, and avoid driving if you are tired, ill, or have taken any drug (including alcohol) that

will slow your mental or physical responses.

- Under supervision, engage in exercise to maintain or increase the flexibility of your joints and your muscular strength.
- If joint and muscle impairments are serious, investigate medical and surgical therapies. Anti-inflammatory drugs and various surgical procedures, including total joint replacement, will in some cases lessen impairment sufficiently to permit safer driving.
- Identify and obtain devices—such as power steering, power brakes, power seats, wide view mirrors, etc.—that compensate for losses of flexibility and strength.

EMOTIONS (Questions 7-9)

Emotions are those strong feelings that can control our behavior as we interact with the automobile, with other people, and the environment at large. One example would be hostile or aggressive feelings directed toward other drivers; another would be inattention to driving because thinking is directed to other personal situations. Driving as we have said, is a complicated task requiring continuous concentration. Highly emotional states which interfere with this concentration are dangerous.

7. When I am really upset I show it in my driving.

The only acceptable answer is "never." It takes only a brief acting out of emotions or a moment of inattention to produce an accident. Anger is an emotion to keep out of the car when you are in it with the motor running.

FACT: "Man drives as he lives." As we age, experience and good judgment can help us continue to be good drivers. However, the consequences of aging are not always pleasant, and may generate hostilities that we direct toward others—in some cases, drivers. Most of us are extensions of what we were in our youth. If we were aggressive and hostile on the road when young, we are likely to be much the same today. The difference is that now, because of decreased driving skills, we may not have the ability to recover from those dangerous highway situations that arise out of aggression and hostility.

The saying that "man drives as he lives" is supported by generations of research. Those in trouble with driving are usually in trouble in other life situations. The "milk toast" person at home or office who turns aggressive on the highway is largely a myth. Some people have a free-floating hostility which is in fact permanently indwelling anger that shows itself frequently in response to trivial happenings. These people find too many things to get upset about and get angrier than the situation calls for. In driving, as in other activities, they are impatient, aggressive, and hostile.

One remedy for getting the anger out of the car may be to get it out of one's life. If we are willing to examine the attitudes that control our behavior in the outside world, we may be able to shift from a "hazardous lane" to a "safer lane."

SUGGESTIONS:

- When you know that you are very emotional about something, delay driving until you have calmed down.
- As we age, we tend to slow down and become more cautious. We may even control our anger, at least outwardly. But it may seethe inside us. Unless we have a healthy "release valve," however, the bottled up anger can literally "pop the cork" and lead to physical illness or explosive situations—in the daily rounds of life as on the highway.
- Awareness is the first step toward controlling anger. The second step is handling it in a healthy manner such as a vigorous walk—several times around the block, or more if necessary; or a talk with a friend or a professional counselor. Getting behind the wheel in a high emotional state—whether joy or anger—diverts attention from the driving task, and invites trouble.

8. My thoughts wander when I am driving.

The ideal answer is "never," but even the best drivers catch themselves at this "sometimes." However if you checked the red circle for "always," you are a dangerous driver—"an accident looking for a place to happen." Driving, we say again, is a complicated and demanding task. It takes continuous concentration, and even momentary lapses can lead to danger.

FACT: Investigations of accidents and fatalities of older drivers, particularly those

over age 65, show errors of omission (failing to take some action) and inattention as underlying causes, or at least as contributing factors. Not seeing road signs and stop signs, failing to yield, and so on, are major problems of older drivers cited for violations and/or involved in accidents. They are thought to be due to inattention—i.e., driving while thinking of other things. When we allow any strong emotion such as joy, anger or sadness, to distract us from the driving task we are wide open for accident. Driving is a complex task, involving all the senses, split-second decision making, and quick, decisive action. The first rule for all drivers should be undivided, concentrated attention to that demanding task.

Yet many of us have seen drivers in animated conversation and looking at others in the car with minimum attention to the road. Still other drivers will drink coffee or try to glance at a newspaper while underway. In an emergency they may not be able to return from their diversion in time to take evasive action. Advancing age brings with it a slowness of recovery. Many conditions can interfere with our ability to concentrate: emotional upset, fatigue, illness, medications, alcohol, full meals, pain, a loud radio, lack of oxygen to the brain. The least we should do is not let our minds wander.

SUGGESTIONS:

- Make up your mind to accept driving as a complicated task requiring your full attention.
- If you catch yourself "daydreaming" or otherwise failing to concentrate on your driving, identify what is diverting you and try to overcome it.
- Take the necessary steps to remove or reduce distractions, whether they are those over which you have control or those for which you will need help.

9. Traffic situations make me angry.

The best answer is "never," but those who have been stuck in traffic long periods understand the checking of "sometimes." However, a red circle "always" reveals that some changes are needed.

FACT: Anger behind the wheel comes out in dangerous ways. Most people trapped in slow moving traffic feel frustrated. Eventually

their frustration leads to anger. Most drivers, however, direct their anger at the situation, not at other people. Those who "take it out" on other drivers and blow their horns and gesture are responding irrationally to anger. They may check their watches often; they may drive very fast and erratically when there is any opportunity to close an open space in the jam. It becomes clear that traffic is giving them the opportunity to act out their anger. What is less clear is that they are probably angry and troubled about other aspects of their lives. Traffic is merely a convenient outlet.

Fear, too, can generate anger. Older drivers afraid of finding themselves in confounding traffic situations and not knowing what to do sometimes respond with anger—in the actual situation, or even in contemplation of it. Or they may be afraid of drivers who go too fast or cut them off. Again they may respond with anger. The danger is that anger will make them less rational and impede their driving abilities.

Furthermore, out of anger drivers may be tempted to take risks they otherwise might not take. Many older drivers so tempted do not recover their skills quickly enough to avoid trouble.

SUGGESTIONS:

- Accept the fact that anger will do nothing to get you out of irritating traffic situations. On the contrary, it may get you into accidents.
- Recognize when you are becoming angry. Then examine why anger seems to reach irrational proportions. Say to yourself, "Why am I getting upset?" And try to take the necessary corrective steps. Keep cool.
- Try to avoid the kind of traffic you know is likely to generate anger. The smoother the traffic flow, the less the anger, the fewer the accidents.
- If you are converting fear of traffic into anger, try to take the steps necessary to overcome the fear. Perhaps the knowledge and special training through the older-driver courses will help. You can at least make an effort.

HEALTH HABITS (Questions 10-12)

Health habits are those everyday practices having to do with exercise, nutrition, and mental condition. Good health habits help keep our

minds and bodies in top condition. They should include regular visits with professional care takers for checkups and preventive health education. Good health habits improve the *sensing, deciding* and *acting* skills required for safe driving. Good vision can keep us out of accidents. Remaining mentally alert can help us to decide more quickly. Exercise can improve our flexibility and strength of response in driving maneuvers. Good nutritional practices can strengthen our bone structure against injurious accidents.

We are, for the most part, in control of our own health practices, including some such as drinking and driving, which are directly related to traffic accidents and fatalities. Whether we exercise this control and do our best to preserve our good health, mobility and independence is up to us.

10. I get regular eye checks to keep my vision at its sharpest.

The only acceptable answer is "*always*." The "eyes have it" when it comes to the influence of good health habits on safe driving.

FACT: Eighty-five to ninety-five percent of all sensing clues in driving come through the eyes. Poor visual capacity is directly related to poor driving. Reduced performance from faulty vision shows up in slowed response to signals, signs and traffic events in ways that can lead to an accident.

Decline of visual acuity—the ability to see detail—comes naturally with aging. After age 45, most people need glasses to see well either at a distance, or up close, or both. The ability of the eyes to focus decreases with age, and it becomes more difficult to change focus from distant to near objects and vice versa. The pupils become smaller, the muscles less elastic, and the lenses become thicker and less clear. Thus the need for more light.

The amount of light required to detect a given object doubles every thirteen years. A 45-year old driver must have four times the light required by a 19-year-old. This is only one of the factors that make night driving especially difficult for seniors. The elderly also have a lower tolerance for bright lights; they more easily suffer temporary blindness from the headlights of other cars. As lenses of the eye age, they thicken and become yellow, causing light to scatter when it enters the eye, thereby producing

a fogging vision and glare. Older drivers do not recover from glare as quickly or fully as younger drivers. A 55-year-old takes eight times as long to recover from glare as a 16-year-old.

Peripheral vision, the ability to see to the side while looking straight ahead, also diminishes with age. This may explain why older drivers have trouble picking up information from the side of the car. Ninety-eight percent of the visual communication that a driver receives comes through peripheral vision. Those with poor peripheral vision in both eyes have accident rates twice as high as those with normal peripheral vision. It becomes more difficult to distinguish color as one ages, and traffic signals may appear dimmer. Red colors do not appear bright to many older eyes, and it may take some senior drivers twice as long as it took in earlier years to detect the flash of brake lights.

Another visual ability that declines over the years is depth perception: how close or how far you are in relation to a car or object ahead. This capacity is especially critical when trying to judge how fast other cars are coming.

Such medical conditions as cataract, glaucoma, and diabetes are more common with age, and can also be dangerous for driving. In short, many conditions can worsen the driving ability of older drivers; awareness of these conditions is critical for the next step—doing something about them.

SUGGESTIONS:

- First and foremost, establish periodic examinations with your eye doctor. Tell the doctor that you are interested not simply in an "eye chart" test but in a thorough examination that will help you to remain a safe driver. Take the corrective steps recommended. If eyeglasses are prescribed, keep them up to date by letting the doctor know at once if they are not working well for you.
- Enroll in an older driver retraining course where you can learn specific techniques for coping with the limits imposed by aging eyes. Improvement will come through your own efforts and/or through special devices that can be installed in your car.
- Accept the limits of "aging eyes," and reduce the amount of driving you do after dark and at

twilight (one of the most dangerous times). The chances of having an accident are three times greater at night than in daytime.

- Avoid tinted windshields, and always keep your windshield and headlights clean.

11. I check with my doctor about the effects of my medications on driving ability.

The only acceptable answer is "always." Some of the most innocent sounding medications (including those purchased without a prescription) can have a negative effect on driving. Even a one-time lapse in checking what that effect might be can produce unfortunate consequences. The drugs that slow us down generally reduce our capacity to *decide* and our ability to process information rapidly enough to maneuver the vehicle safely. Another drug (which many may not think of as one) with this same effect is alcohol—probably the single most important human factor in fatal accidents for drivers over 65 (as well as for younger drivers).

FACT: Twenty-five percent of all drug prescriptions go to people over 65, who make up 11 percent of the total population. Older people consume more drugs than any age group. Some of them suffer multiple medical problems and chronic illnesses requiring not only daily medication, but combinations of medications. Frequently they are unaware of the possible effects of these medications on their driving ability. Why? Because there is no communication between them and their medical doctor about the matter, and there may be no understandable statement about the side effects in the instructions on the prescription container.

Furthermore, some older people may be under the care of several doctors, all writing prescriptions with little or no knowledge of what others have prescribed. The drug mixtures of several prescriptions can induce unpredictable reactions and side effects. We may be sure, however, that if these have an effect on driving skills, it will be a negative one. All the more so for older persons because of their increased sensitivity to medication and their susceptibility to unusual reactions. While one might be wary of the effects of prescription drugs, even those sold without prescription (over-the-counter) can reduce driving ability. Cold tablets, cough syrup and sleeping pills are among these.

It is important to avoid alcoholic beverages when taking other medications. With few exceptions, the combination of alcohol and other drugs increases the impairment of driving skills that would occur with alcohol or certain other drugs alone. Together they make a potent additive that in extreme cases can cause coma or death. In relation to driving, the only safe practice is to avoid alcohol altogether if there is a chance of driving. Half of all traffic fatalities involve someone who has been drinking. There is no question that alcohol lessens the skills required for safe driving. One's tolerance of alcohol decreases steadily with age, apart from any personal history of drinking. Alcohol has a powerful impact on our total system, physical and psychological. All other things being equal, whoever starts drinking at age 60 will become intoxicated much faster on less alcohol than a 35-year-old taking a first drink. Older people are also less efficient at ridding the system of alcohol; and food, mood, fatigue, medication, general health, weight, size of body can all make a difference in predicting overall effect.

Taking into account the deterioration in skill over which aging drivers have little or no control, it simply makes good sense to avoid drinking then driving. Why push our luck? Furthermore, heightened public concern with the tragedies of driving while intoxicated has led to costly penalties, including high fines, jail and revocation of license—extraordinarily uncomfortable consequences at best.

SUGGESTIONS:

- Convince yourself that even prescribed medications may have a negative influence on your driving skills.
- Check with your physician to determine what the side effects of a prescribed medication might be and what, if anything, you can do to counter them, particularly as they apply to driving. If more than one physician is prescribing for you, make sure all of them know about all the drugs you are taking, whether prescribed or not.
- Read all labels and instructions on prescriptions and over-the-counter drugs to determine side effects and their relationship to when and where you should or should not drive.
- Keep telling yourself that the only safe action

at your age is not to drink alcoholic beverages at all if you intend to drive, and not to ride with anyone who has been drinking. There are many ways to accomplish this. You probably know some of them from television, newspapers and other sources. But you have to choose a way that works for you. The driver retraining courses referred to throughout this discussion provide opportunities to explore effective countermeasures. Just another very important reason for enrolling.

12. I try to stay abreast of current information on health practices and habits.

Our preferred answer is "always," but we cannot always do all the things we want to do; "sometimes" is therefore understandable. However, a "never" red circle answer would seem to identify one who has given up on personal health, or who may feel loss of control over it. In relation to driving, this could be someone just waiting for the inevitable—perhaps the revocation of a driver's license because of unsafe performance. If this is true of you, the better way is voluntarily to turn in your license before somebody is injured, and to plan alternative transportation. However, remaining up to date in terms of preserving our health and our driving skills is very much within the control of most of us. We are going to try to convince you of that, and tell you why it is important.

FACT: Four-fifths of the two million annual deaths in the United States and more than half of the disabilities caused by chronic disease are closely related to personal health habits and behavior. Individual life styles have a direct relationship to longevity and the quality of life. It all begins with your attitude about how much control you believe you have over the quality of your life, and ends with how much of it you are willing to exercise.

It has been said that the greatest discovery of our generation is that human beings, by changing their attitudes, can change the outer aspects of their lives. Those of you who answered "always" are presumably always on the lookout for new information about ways to improve how you feel and act, and how you can attain and keep the life style which gives you the most satisfaction. In relation to driving that means the mobility and the independence that come with keeping

your license.

And you will do all you can to keep it. This will include ways to remain alert and quick to respond in driving, and ways to keep up to date in health habits and the requirements of safe driving. Following these ways will help you to feel confident and in control of yourself when you drive.

Unfortunately, not everyone is an "always" person, and the people least likely to change behavior for the good are the ones most at risk. We wonder if they know what they are missing. If they have simply given up, they should be told there is reason to become interested again. True, we have repeated throughout this discussion that with age comes a reduction of driving skill. But even though research points to changes in the central nervous system as the culprits, it appears "possible that life habits of physical exercise reduce the extent of slowing with age; increased motivation may do this too. Practice reduces the extent of slowing, and extended practice may eliminate it completely. Finally, it is most important to recognize that whatever the significance of the slowing with age, the magnitude of the individual differences is very great. Very many old people are quicker in responding than many young adults."

And there you are! One of the purposes of this self-rating form is to help you become, if you are not already, an "activated driver"—one of those who assume responsibility for their own driving skills and who self-examine and compare their ability with the requirements for safe driving. The premise of the form is that through knowledge and self-awareness you will understand what a safe driver is and will assume the responsibility to remain or become one, or decide to give up the driver's license and seek other means of transport. Furthermore we want you to appreciate fully the close ties between personal health habits and driving skills. The attitude that encourages you to remain informed on health practices probably will also help you to feel in control of your future as a driver.

SUGGESTIONS:

- Think realistically about how much control you have and/or want in terms of health habits as they relate to your life in general and to your driving.

- Learn the relationships between good health practices and their meaning for your future as a driver. Keep in mind that the slowness that comes with aging can be restricted or overcome by motivation, regular exercise and practice.
- Take as much control as you can of your health habits and life style, recognizing the obvious connection between command of personal health and skill in driving.
- Understand the value of nutrition, exercise, medical check ups, and the effects of medications, drugs and alcohol.

RECORDS AND OTHER INDICATORS

(Questions 13-15)

There are numerous ways we receive "feedback" on our driving ability. Police cite us when we disobey a law; and, if we are convicted, the citation becomes part of our driving Record. If we have an accident exceeding a defined degree of seriousness, regardless of fault, that too becomes part of our Record, including the one kept by our insurance company.

Concerned family members and friends may point out that we are dangerous drivers and that we should either take steps to reduce the danger or give up our license. That recommendation is often made, but seldom followed. Few older drivers voluntarily surrender a license. It is too important to them. In fact, it is so important that it distorts their own ability to accept the fact of their dangerous performance so obvious to others. They deny they are doing as poorly as the records and other indicators reveal. This self-rating form is one way to persuade older drivers to be more realistic about their driving. It contains Suggestions on how to maintain and enhance their skills and overcome their deficiencies.

Its purpose is also to compare our own impression of how safely we drive with what is suggested by records and other indicators. Not unlike people of all other age groups, we act on what we believe to be true, more so than on what may in fact be true. Therefore it is hoped this self-rating will help us to see ourselves as clearly as possible, so that we can take whatever action seems warranted in truth, in the best way we can find it.

13. My children, other family members or friends are concerned about my driving ability.

"Never" is the best answer here, but most of us probably have been aware of critical comments on our driving. We might have felt that the critics were worse drivers than we, or were just generally afraid in certain traffic situations, no matter who was driving. And we may have been correct on one or both counts. However, when we check the yellow circle "sometimes" or, more especially, the red circle "always," we have a more valid reason to pay attention than we would like to admit.

FACT: Drivers over 50 have the highest misconceptions of the actual risk of having an accident. These misconceptions grow with age. Furthermore older drivers underestimate the relationship of their own actions and problems to accident risk. Over 80% of the senior drivers surveyed feel they have total control over accidents; and 90% believe the cause of any accident involving their vehicle lies outside their own behavior. The denial that one's own self has age-related problems is a dangerous supposition, especially when applied to driving.

There is little doubt that denial is a psychological method of coping, because admitting that one is less able or less in control, would be opposed to the American values which venerate youth and the capacities and energies associated with it. Denial in relation to driving abilities is reinforced because the giving up of a license is an extremely traumatic event: it relates not only to life style, but, for many, to survival—and with good reason, for only 15% of the American population has access to mass transportation. It is understandable, then, that older drivers resist comments that threaten the continuance of driving. Yet these are voices to be listened to—at least for clues about how we might improve.

SUGGESTIONS:

- Lend an open ear to the comments of those concerned about your driving, and keep an open mind. Be sure you are not dismissing the value of these comments out of denial: burying your head, ostrich-like, in the ground.
- Look for clues to overcome the dangers of

those comments you judge valid. It is possible that a retraining course or such corrective action as treatment for faulty vision or other physical problem might help. So might more caution in relation to medications and alcohol.

- Begin to prepare for the day when driving will no longer be possible for you. With adequate planning, a non-driving life may not be so bad as it seems.

14. How many traffic tickets, warnings or "discussions" with officers have you had in the past two years?

Of course "none" is the preferred answer here, for it would be a sign that you are doing everything you should be doing to remain a safe driver (or—between us—that you haven't yet been caught doing things you should not be doing). "One or two" might mean that you are not as current as you should be on laws and rules of the road; this shortcoming can be handled in ways already discussed in these pages. "Three or more" demands a serious look at how you are driving, a look free of the denial we have described. To be stopped many times suggests that you must be driving dangerously a good part of the time. If little can realistically be done to reduce that danger, you should make alternate plans for transportation.

FACT: Some older drivers are aware of their limits and cope with them. Others, however, overestimate their real capabilities and their compensatory behavior is not adequate. They do not always have a clear impression of their driving problem, and may even feel that their driving is good when it really isn't. When questioned about their most obvious errors, most of them claimed to be unaware that they had made those errors. The most cited problems of older drivers include failure to yield, failure to observe signs and signals, careless crossing of intersections, changing lanes without due regard for others, improper backing, and driving too slowly. Inattention and stimulus overload (i.e., too much information to handle well) seem to lie at the root of most of these conditions.

SUGGESTIONS:

- If you have received traffic citations or "warnings," examine the details for the probable

causes. If one cause appears to be inadequate knowledge of traffic regulations or specific signs and signals, find out where you can obtain the latest information. Get it and learn it. If citations are due to a physical condition (such as poor vision, resulting in missed signs and signals), try to have the condition corrected. If the citations seem to be caused by inattention, resolve to pay constant attention behind the wheel. If the problem seems to be information overload— inability to take everything in quickly enough to act properly—look for an older driver retraining course.

- If causes of citations seem deeper, reexamine those about which you can do little by yourself. Perhaps you can find some improvement through devices installed in the car. Keep in mind that what should be done, should be done quickly, for citations relate directly to accidents; and one citation can be a warning that trouble is coming unless some changes are made.

15. How many accidents have you had during the past two years?

Once again, "none" is the most desirable answer. Depending on the severity, "one or two" can be one or two too many. If you answered "three or more," we are thankful that you are here and able to participate in this self-evaluation experience, and, if you will admit it, so are you.

FACT: An accident is the best predictor of another accident. One accident is often a signal that others are on the way. Typical older-driver accidents occur on clear days, on straight, dry pavement, and at intersections within 15 miles of the driver's home. Ninety percent of these generally show lower speeds than similar accidents among younger drivers. They involve more than one vehicle, and result in less serious vehicle damage. But injury rates are higher for seniors.

Older drivers are likely to be held at fault for many of the same reasons for which they receive citations: failing to yield, not observing traffic signs and signals, careless crossing at intersections, improper turning and lane changing, and careless backing. Furthermore seniors with the most recorded accidents do most of their driving under conditions conducive to accidents—at night and in bad weather. They also have a

higher incidence of medical conditions (e.g., heart and artery problems, arthritis, broken bones, visual and hearing problems, and diabetes).

However, basic to a considerable number of the actions (or non-actions) that produce older-driver accidents are inattention, and a slowness in processing information and taking the required action. If older drivers honestly confront themselves, they may begin to admit that they do not see well at night, have missed signs, are nervous in traffic and are defensive about their own driving skills. It is to be hoped that such admission will lead to corrective actions.

It may also help eliminate their attempts to deny their lowered ability to cope safely with traffic situations. This denial is probably the older driver's most pervasive danger because it encourages continuation of a degenerating driving behavior without seeking ways to improve it. Without correction, this situation can lead to tragedy.

Not to be forgotten is the possibility that a driver at fault can see his financial resources wiped out by high liability claims, even when insured. To the older person who has lived conservatively in order to remain financially independent or to leave a "nest egg" to heirs or a worthy cause, this can be an ironic turn of events indeed, tragic enough to ruin the twilight years.

SUGGESTIONS AND CONCLUSION:

- As the records tell us, most older drivers do pretty well, and we can be proud of being among them. They recognize many of their own problems, and a lot of advice we have been offering in these pages they do not need. Many of you already compensate for the limits you see in yourself as drivers. You avoid night time driving, dense traffic periods, and the personal behavior and life style that contribute to accidents.

However, it is important to recognize that many traffic changes have occurred in our lifetime, and that it is equally important for us to update ourselves on these to remain safe drivers. Furthermore, few of us have had any formal training as drivers, and there is much new knowledge about good driving practices that can improve traffic safety for all.

Many of our shortcomings can be dealt with

through older-driver refresher courses. Check with your state motor vehicle department to find out where courses are available. As we have said, The American Association of Retired Persons (AARP) and The American Automobile Association (AAA) have been active in such offerings. If you discover that no course is available to you, urge the above named organizations and your local community college to institute one you can take.

- We hope that as you reviewed your score and the meaning, explanations and suggestions for the yellow and red circles, you became more aware of ways to improve your driving performance. Keeping the driver's license is critical for our mobility, our independence and our well being. We have shared with you all we can toward that end within the framework of this self-rating. We repeat the central idea: to put you more in control of your own future as a

driver and to suggest steps you should take to retain that control and continue to drive safely.

Remember, this self-evaluation is only one step—a motivator—to a more comprehensive and continuing evaluation of your driving abilities. For a more complete assessment, as this might become required, many more questions would be necessary, along with medical, physical, behind-the-wheel and written or oral examinations of traffic knowledge.

- No matter how good we are at driving there comes a day when we must give it up to avoid injury to ourselves and those with whom we share the road. In our own self-interest we should delay that day as long as we can. But when our self-examination and other inputs tell us we can no longer correct our shortcomings adequately enough to drive safely, we must plan for other ways to get around. ■

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